

KALPANA CHAWLA

Unconventional clothes and bobbed hair were not the only indications of Kalpana's zest for life – this spirited young girl from Karnal wanted to fly! Her intelligence was multi-faceted, her talents varied and her interests inspiring. The path she charted from her traditional home in Haryana to NASA's elite band of astronauts is the stuff of legends.

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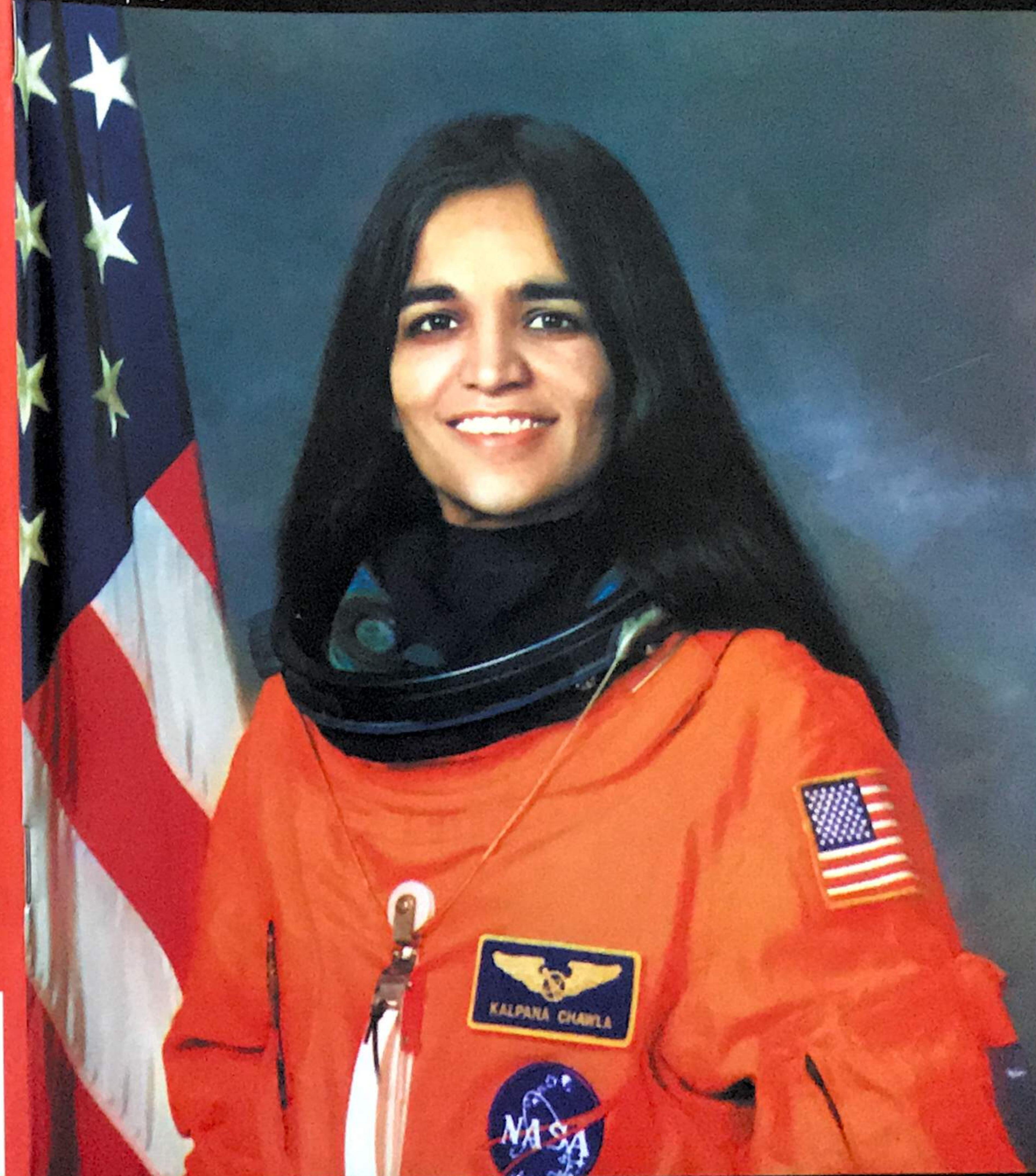
BRAVEHEARTS



KALPANA CHAWLA

THE FIRST INDIAN WOMAN IN SPACE

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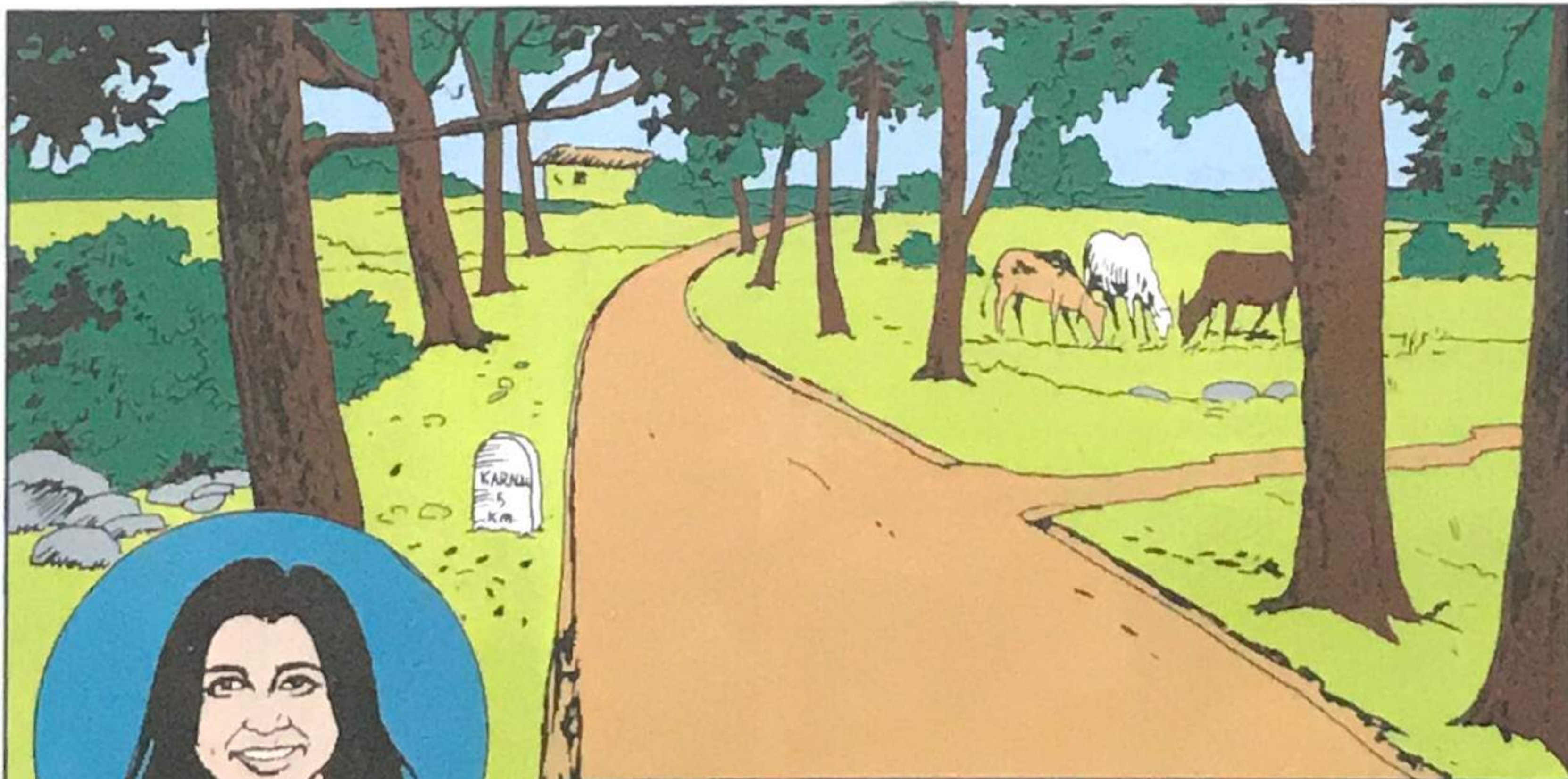
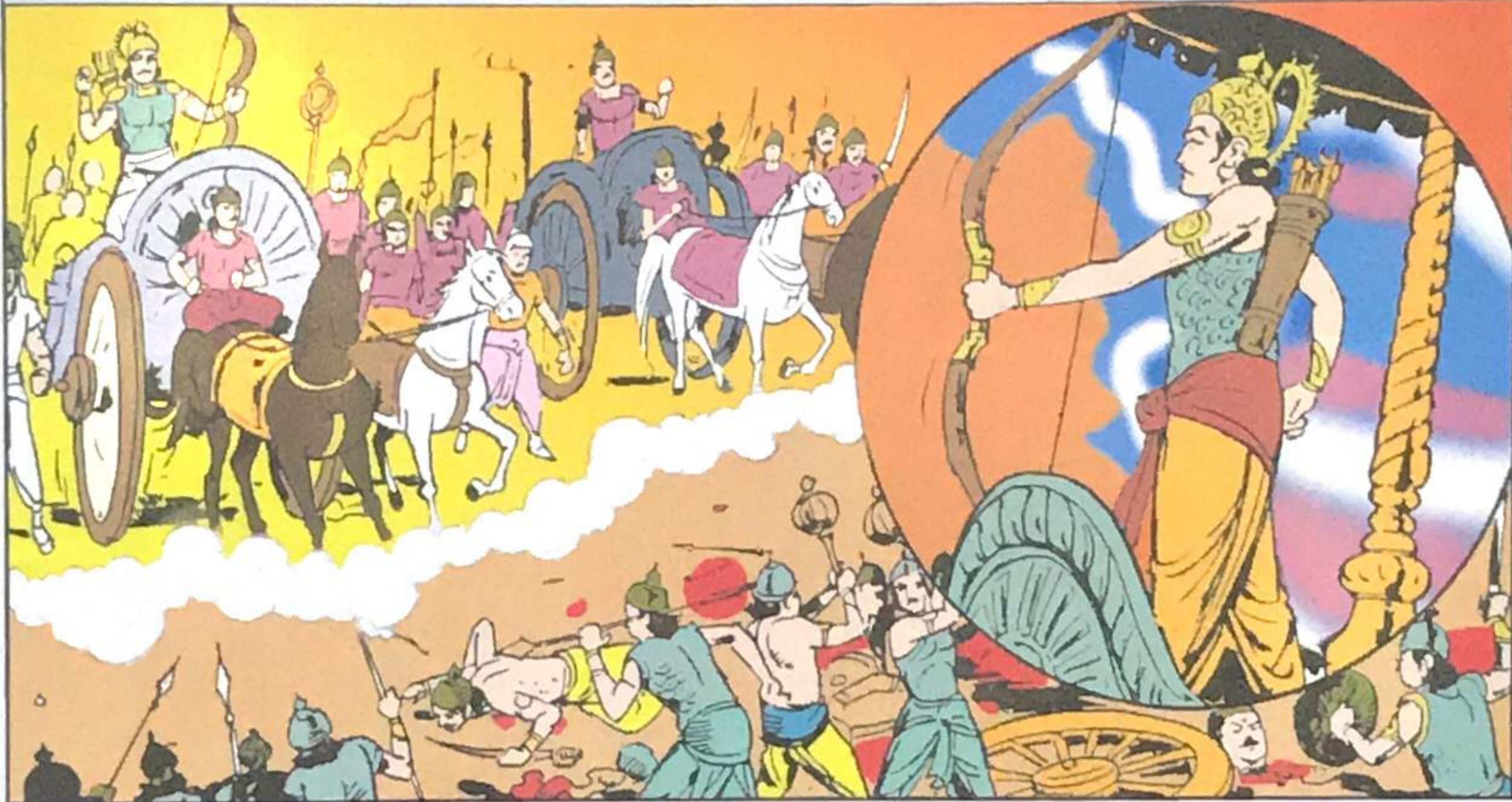
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KALPANA CHAWLA

NESTLED ON THE BANKS OF THE YAMUNA RIVER IS THE SMALL TOWN OF KARNAL. ALTHOUGH THIS TOWN MAY BE JUST A LITTLE DOT ON THE MAP OF INDIA, IT MANAGES TO ETCH ITS PLACE IN THE HISTORY OF THE NATION IN A MYRIAD LITTLE WAYS. NAMED AFTER KARNA, THE LEGENDARY HERO OF THE MAHABHARATA, KARNAL ALSO HAS THE HISTORIC BATTLEFIELDS OF PANIPAT AND KURUKSHETRA NEAR BY.



THE NATIONAL HIGHWAY NUMBER ONE CONNECTS KARNAL TO THE CAPITAL, NEW DELHI. IT IS THE HISTORIC GRAND TRUNK ROAD THAT CONNECTED INDIA TO THE REST OF THE WORLD. IN MORE RECENT YEARS, THE NAME OF KARNAL HAS BEEN BLAZED ACROSS THE SKIES BY A DETERMINED YOUNG WOMAN CALLED KALPANA CHAWLA.

IF WE WERE TO TRACE THE PARENTAGE OF KALPANA, IT WOULD LEAD US TO THE TURBULENT TIMES OF THE PARTITION OF THE NATION WHEN, AS A YOUNG BOY OF 16, HER FATHER FLED TO INDIA WITH HIS FAMILY, LEAVING THEIR ANCESTRAL HOME IN PAKISTAN.



WITH HORDES OF OTHERS, THEY TREKKED ACROSS THE NORTH INDIAN CITIES OF LUDHIANA, JALANDHAR, KHANNA AND AMBALA, HOPING TO SEEK THEIR FORTUNE IN DELHI, THE CAPITAL.



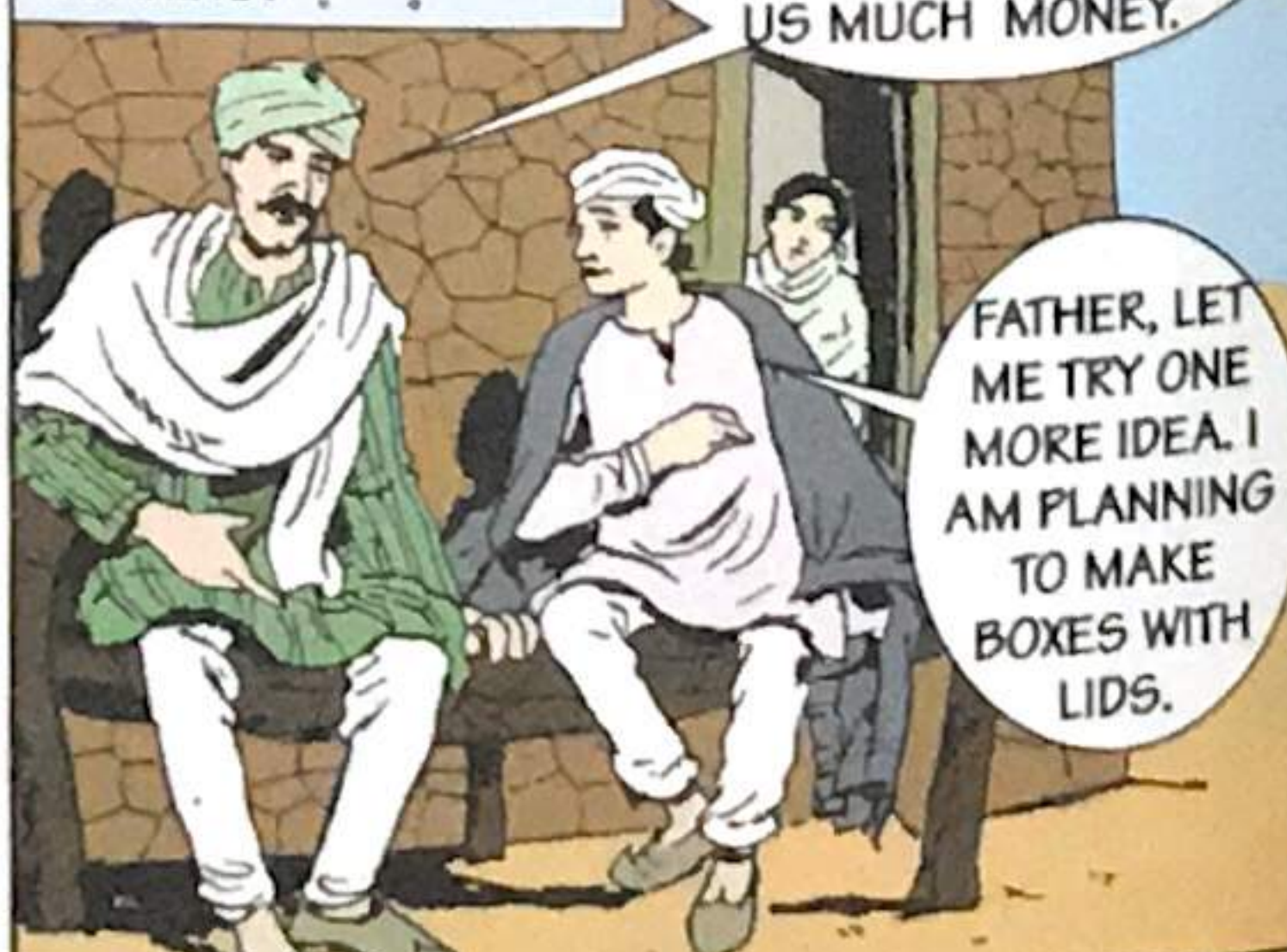
BANARSI LAL CHAWLA DECIDED TO STOP AT KARNAL WITH HIS EXTENDED FAMILY OF 20. HE WAS JUST A TEENAGER THEN, BUT HE WAS A GREAT SUPPORT TO HIS FATHER, LABHAMAL.



THEY MOVED INTO THE FIRST VACANT BUILDING THEY FOUND, AN OLD MOSQUE.



THEY TRIED A NUMBER OF ODD JOBS TO KEEP THE HOME FIRES BURNING.



WE HAVE TRIED SO MANY SMALL BUSINESSES, BUT NONE OF THEM IS FETCHING US MUCH MONEY.

FATHER, LET ME TRY ONE MORE IDEA. I AM PLANNING TO MAKE BOXES WITH LIDS.

IT WAS A STRANGE BUT WISE DECISION.

BOXES WITH LIDS? WHY ON EARTH?

WELL, THERE ARE SO MANY REFUGEES. THEY ALL NEED BOXES FOR KEEPING THEIR RATIONS!

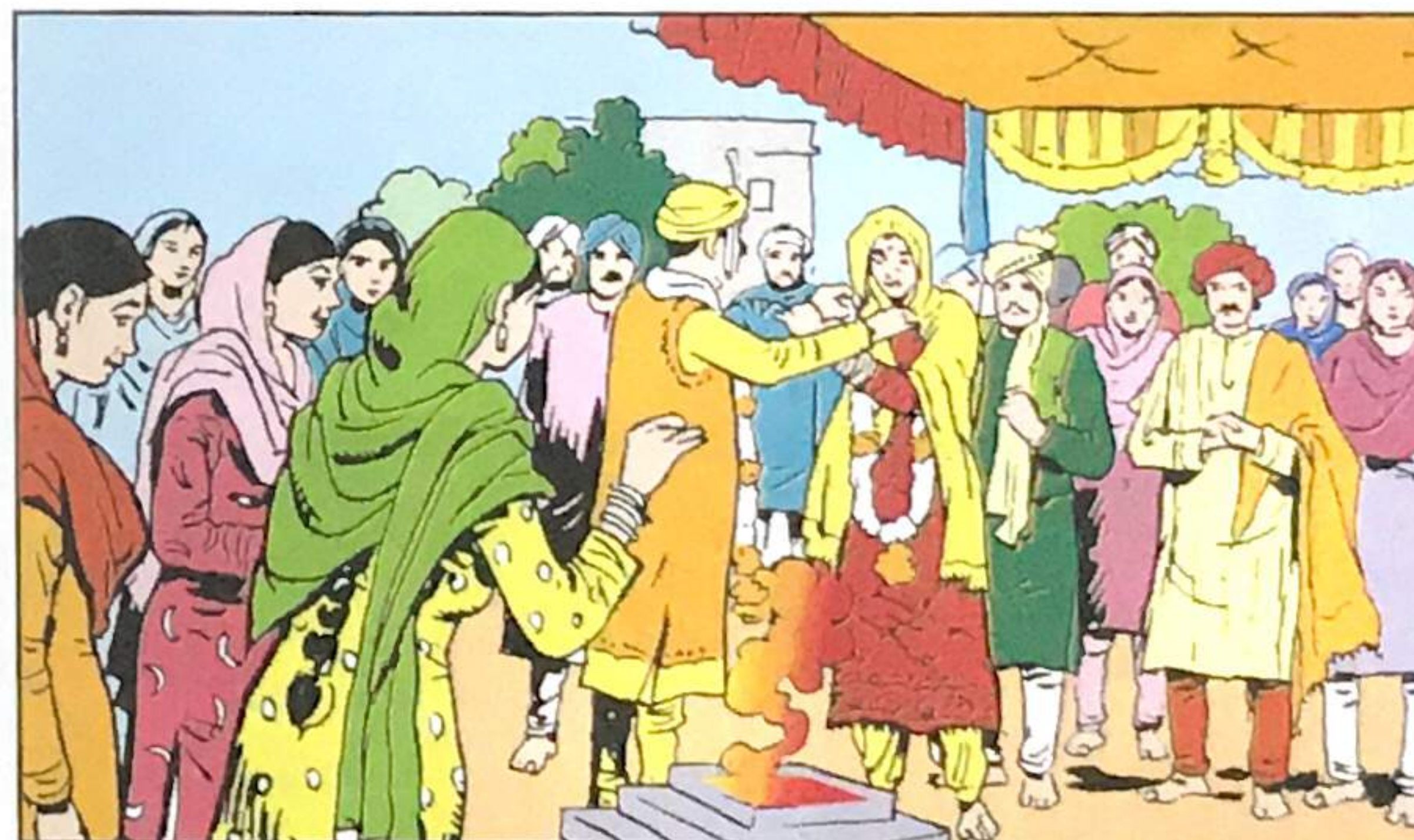


EVEN IN HIS YOUNG DAYS BANARSI LAL WAS AN ENTREPRENEUR BY NATURE.

THE FORESIGHT OF TURNING A NEED INTO AN OPPORTUNITY WORKED WELL.

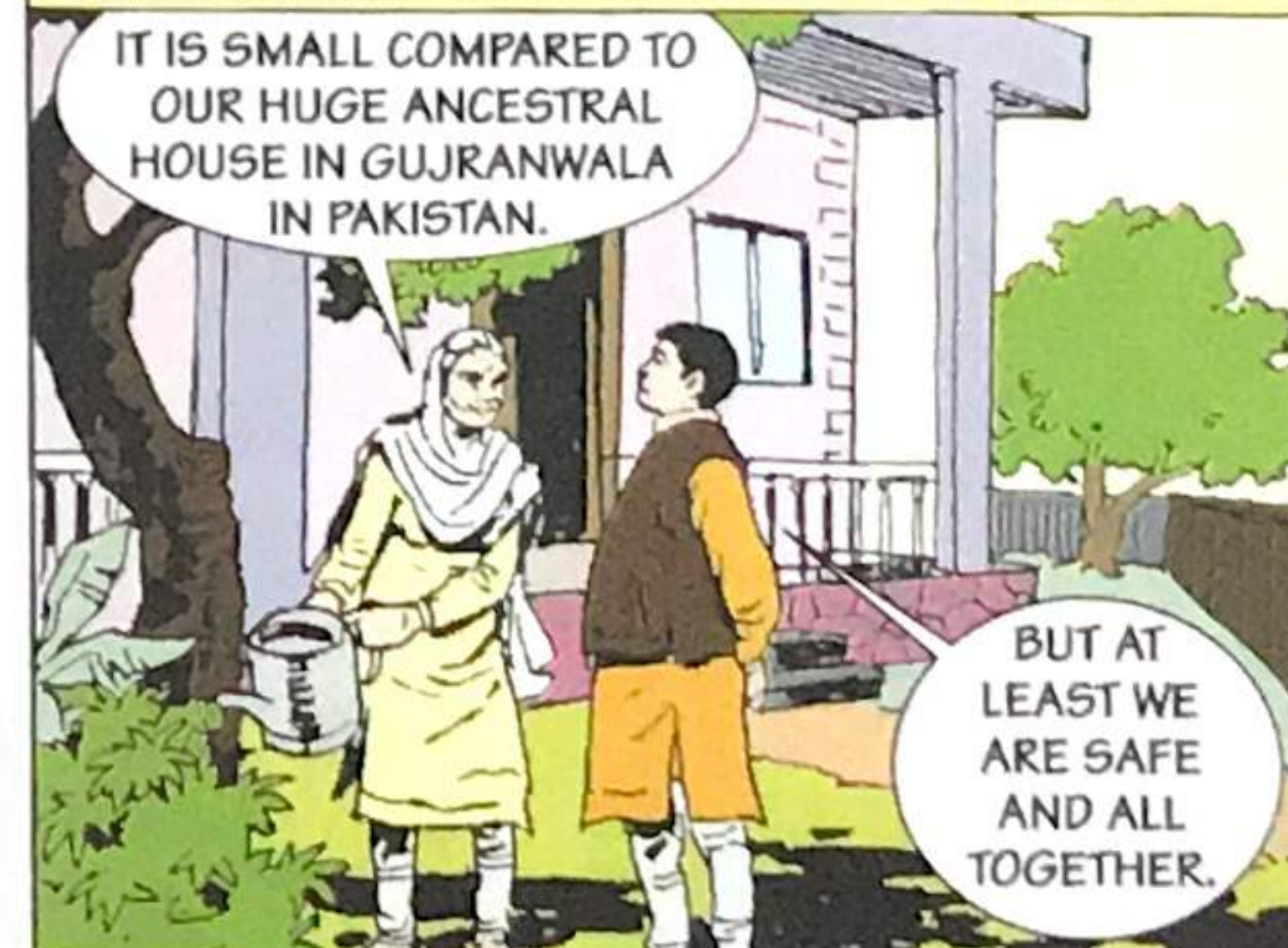
SO, HOW MANY BOXES DID YOU SELL TODAY?

QUITE A FEW AT THE RAILWAY STATION AND NOW I AM SELLING THEM TO THE SHOPKEEPERS TOO.



BANARSI LAL WAS MARRIED TO SANYOGITA, DAUGHTER OF A REPUTED PHYSICIAN, DR. KHARBANDA, WHO WAS ALSO A MIGRANT REFUGEE FROM ANOTHER PART OF PAKISTAN. IN DUE COURSE, THE BUSINESS AND THE FAMILY GREW. THEY HAD TWO DAUGHTERS, SUNITA AND DEEPA, AND A SON, SANJAY.

THE FAMILY FORTUNES TURNED AND THEY WERE ABLE TO GET A LARGE HOUSE IN THE CENTRE OF TOWN.



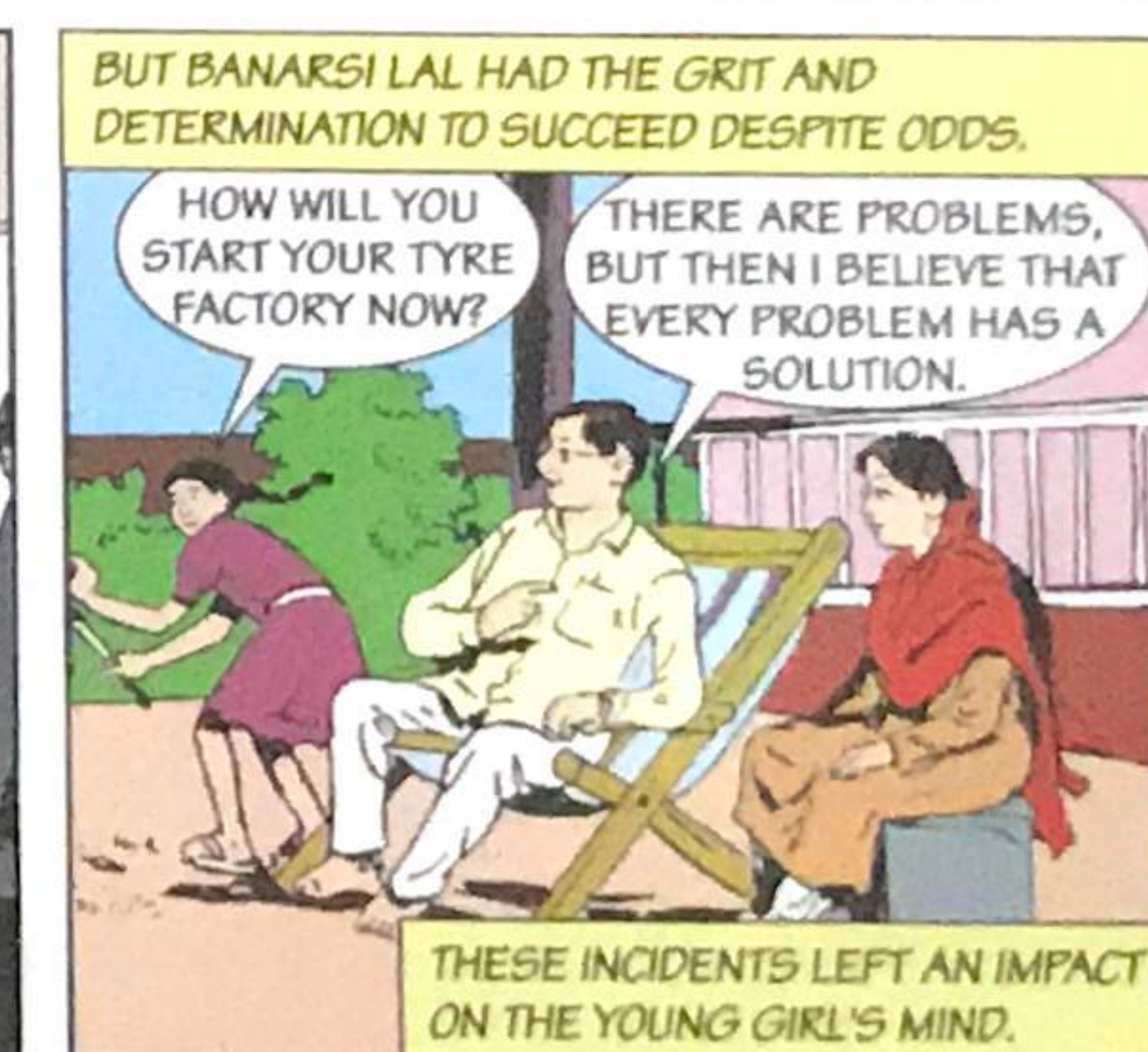
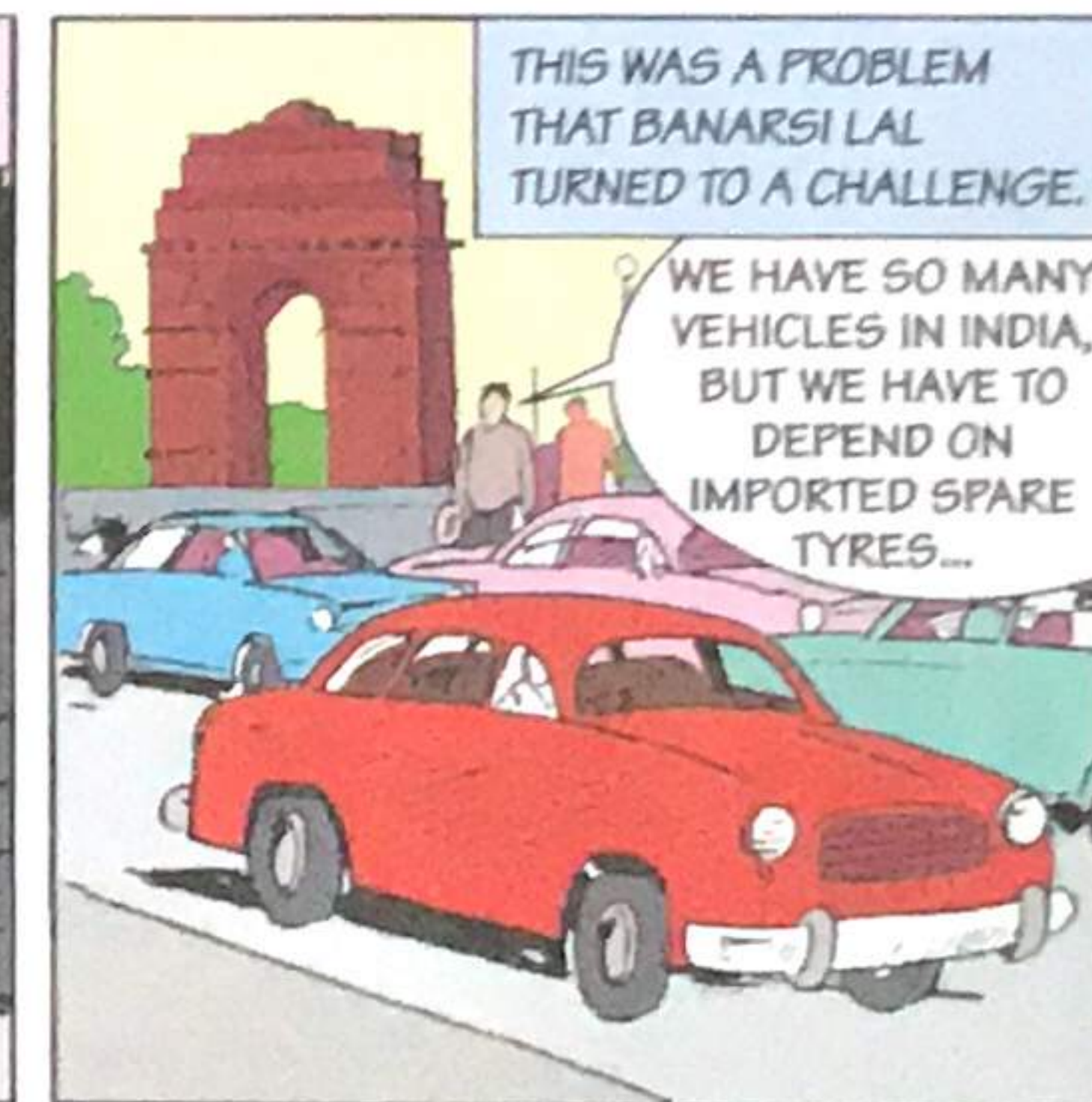
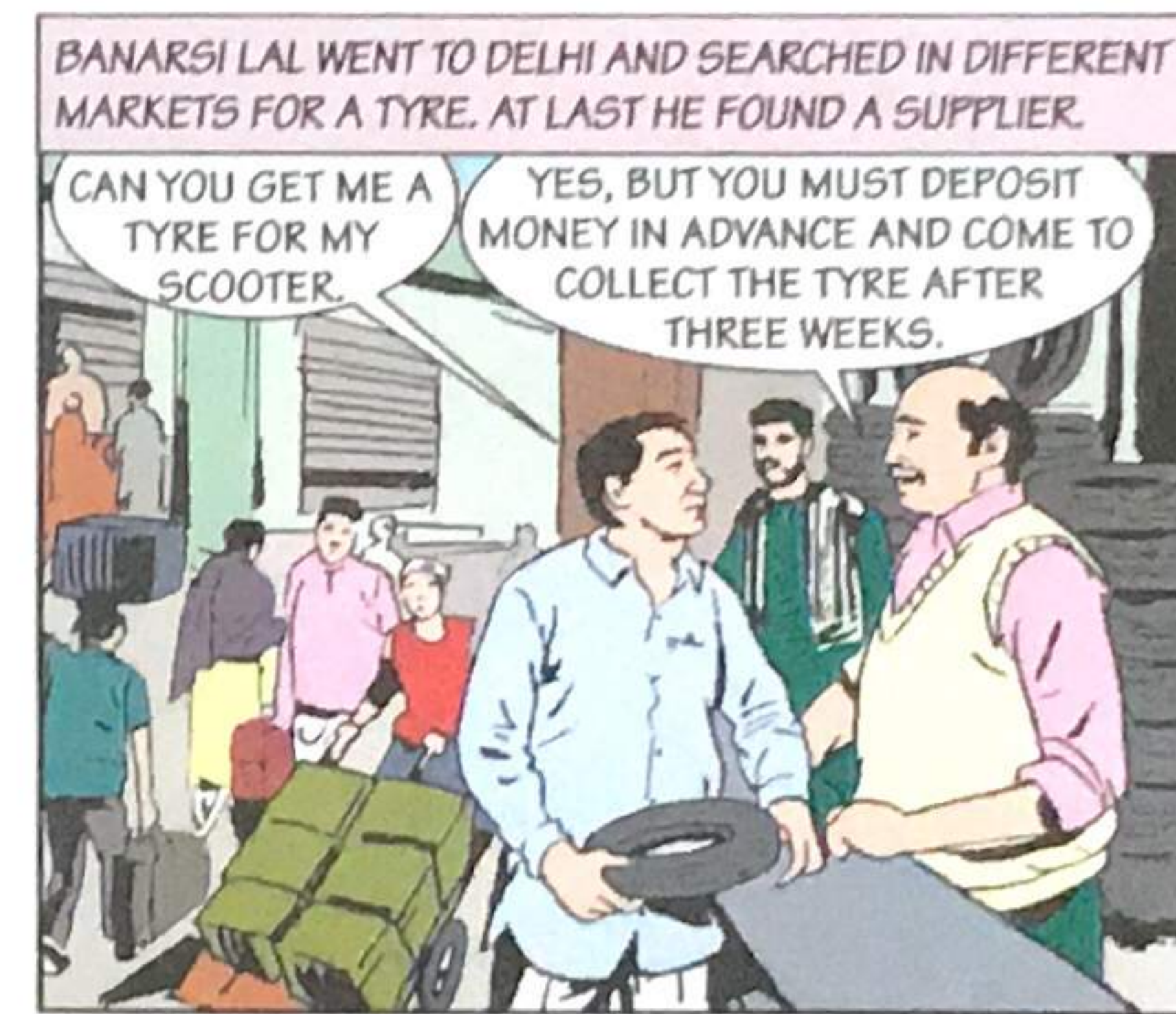
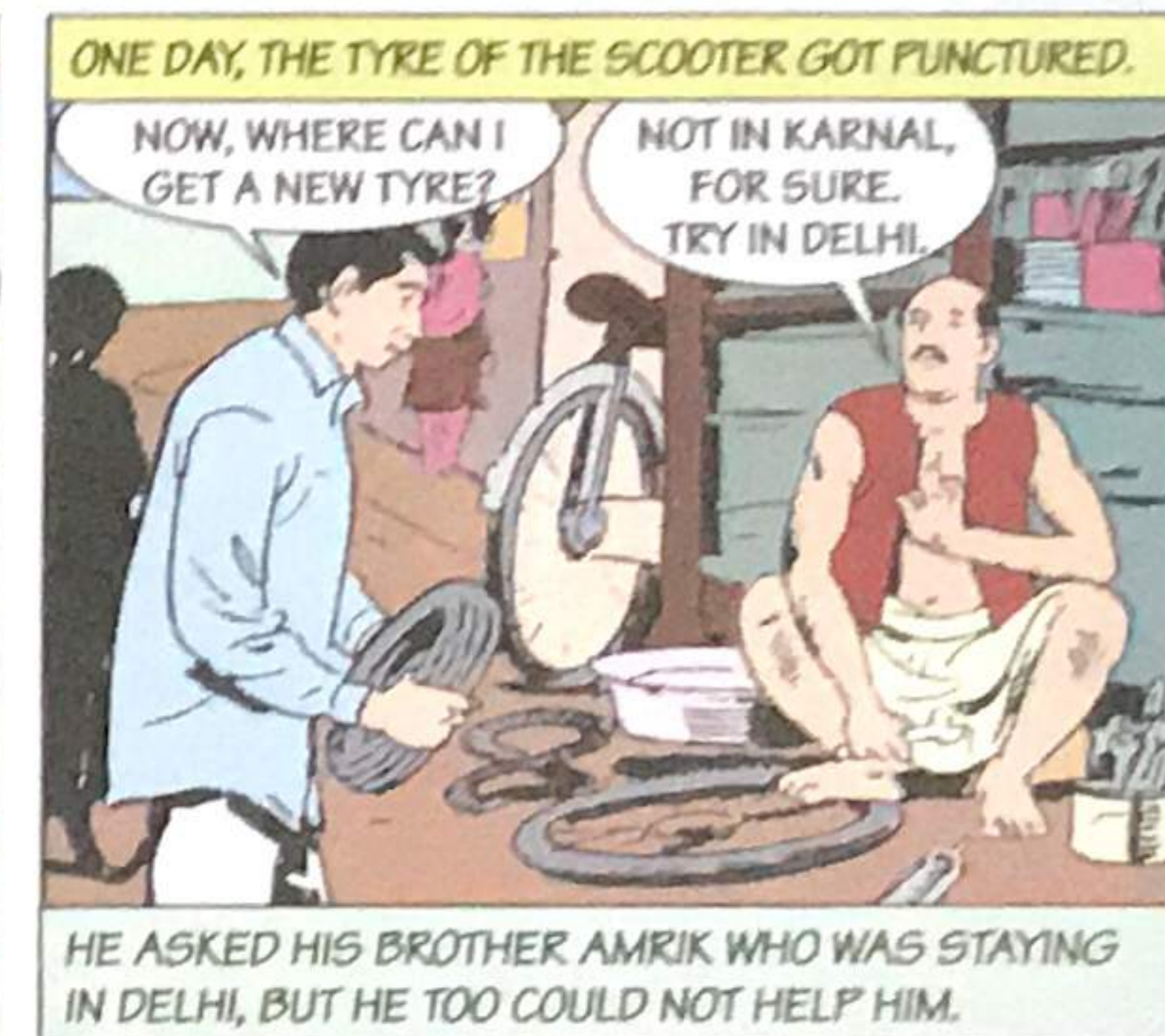
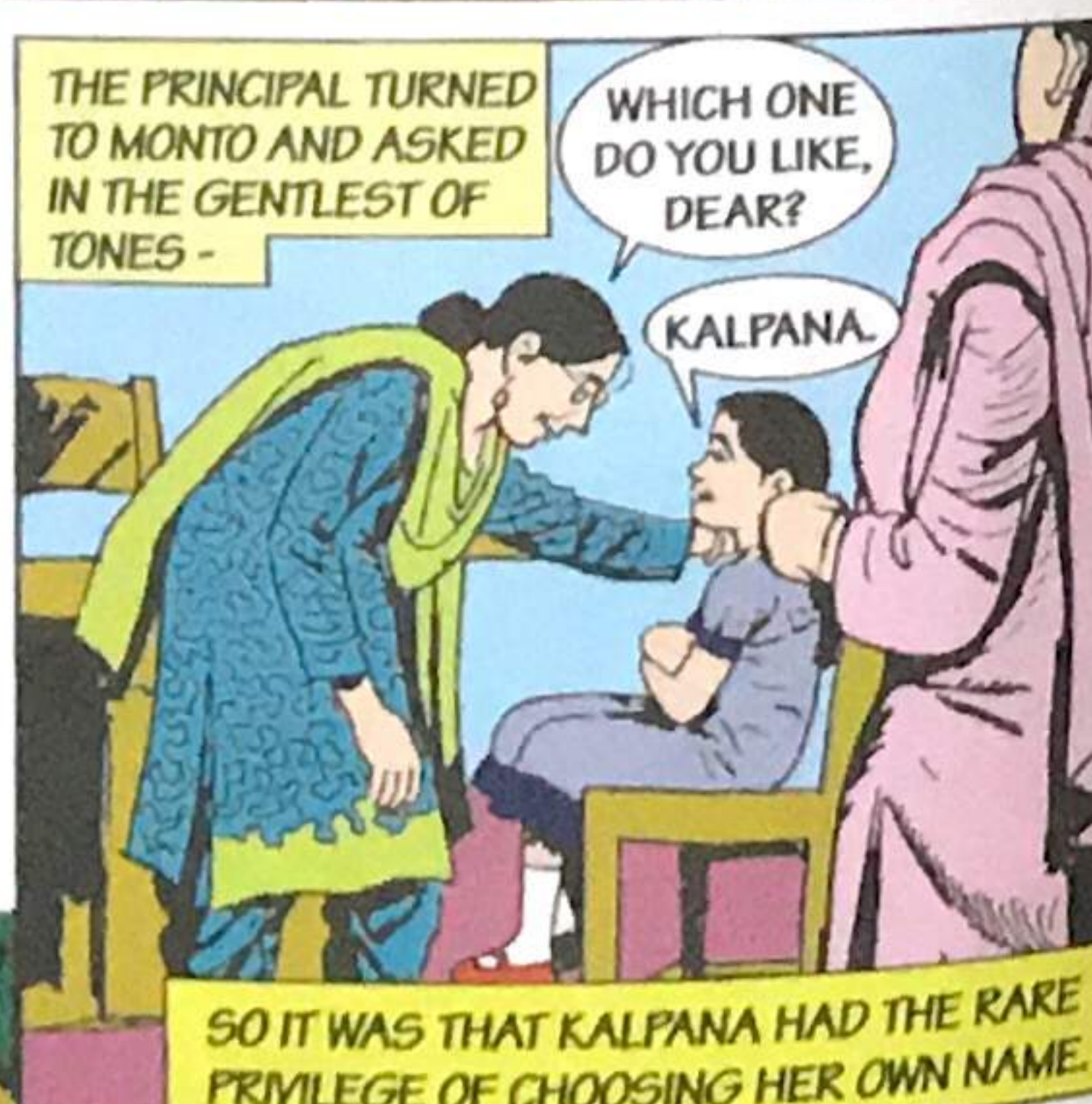
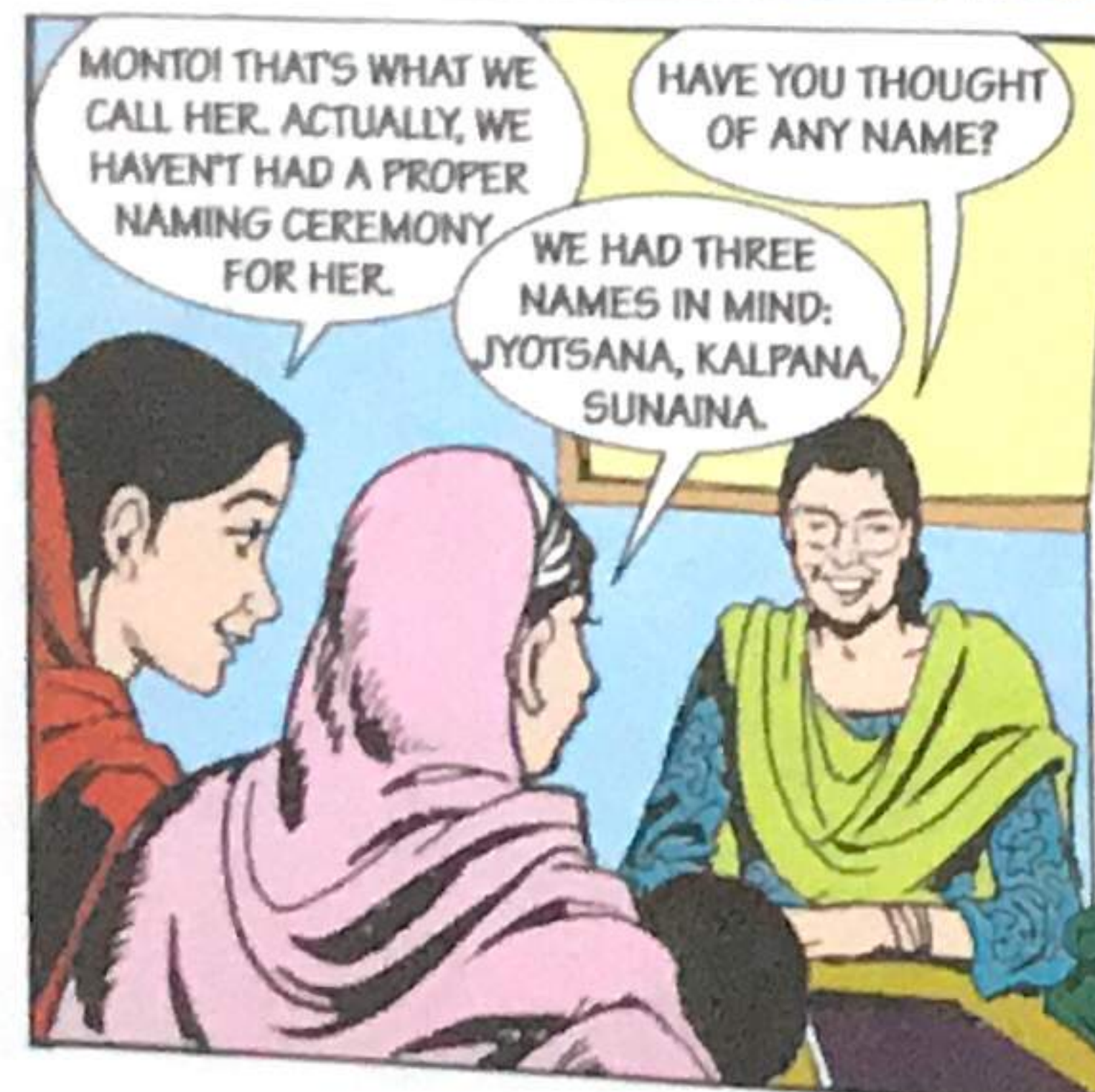
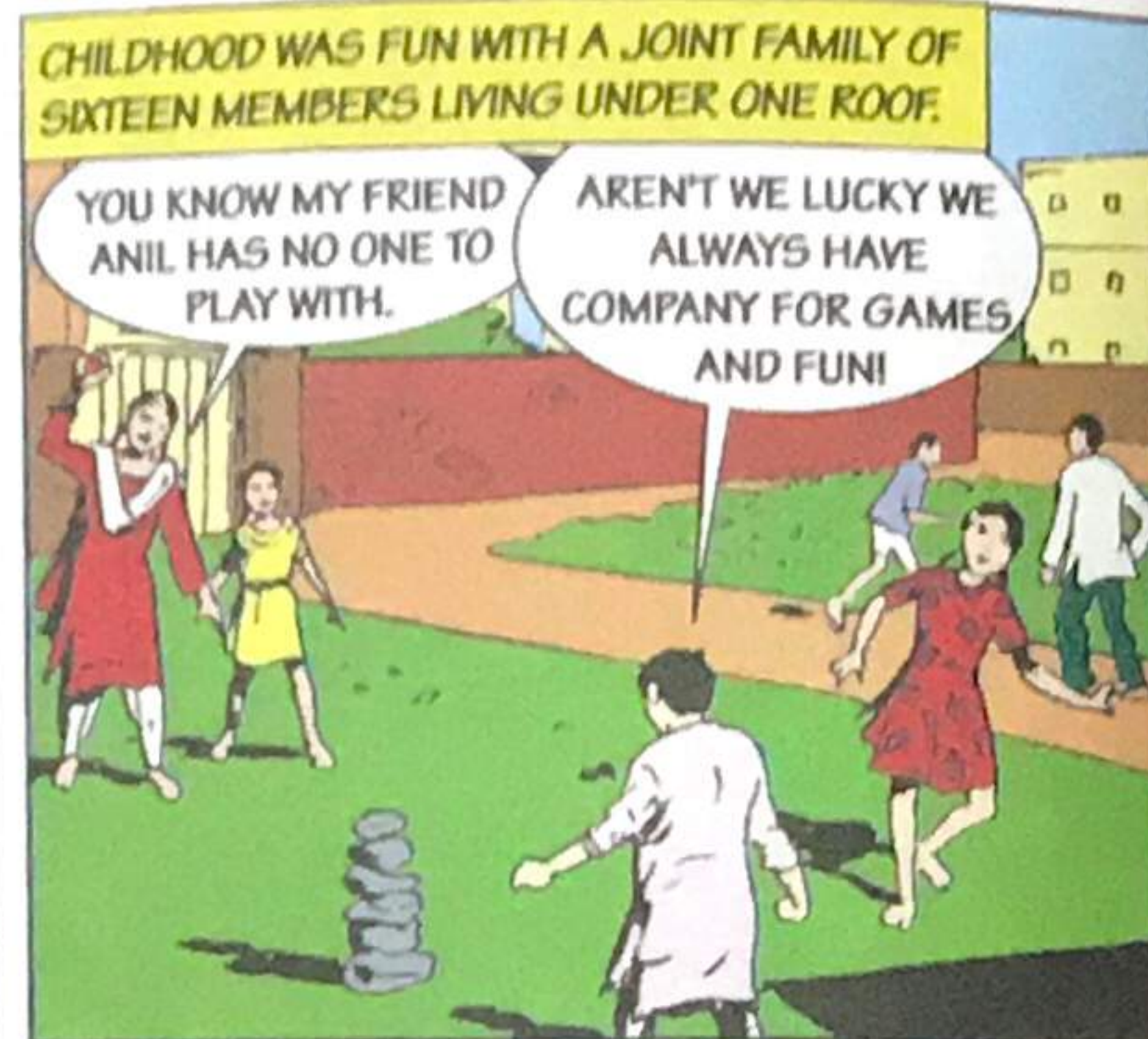
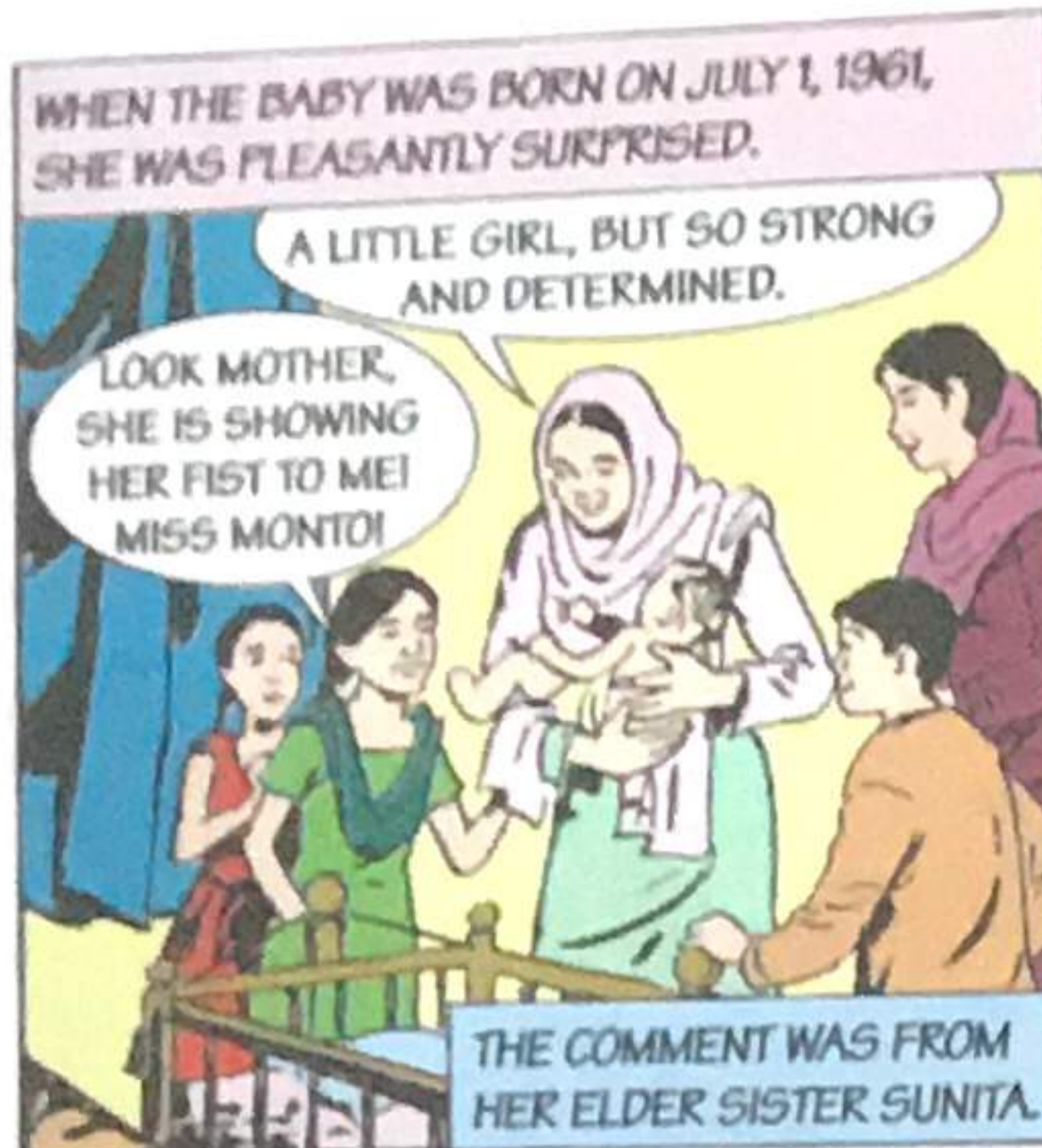
IT IS SMALL COMPARED TO OUR HUGE ANCESTRAL HOUSE IN GUJRANWALA IN PAKISTAN.

BUT AT LEAST WE ARE SAFE AND ALL TOGETHER.

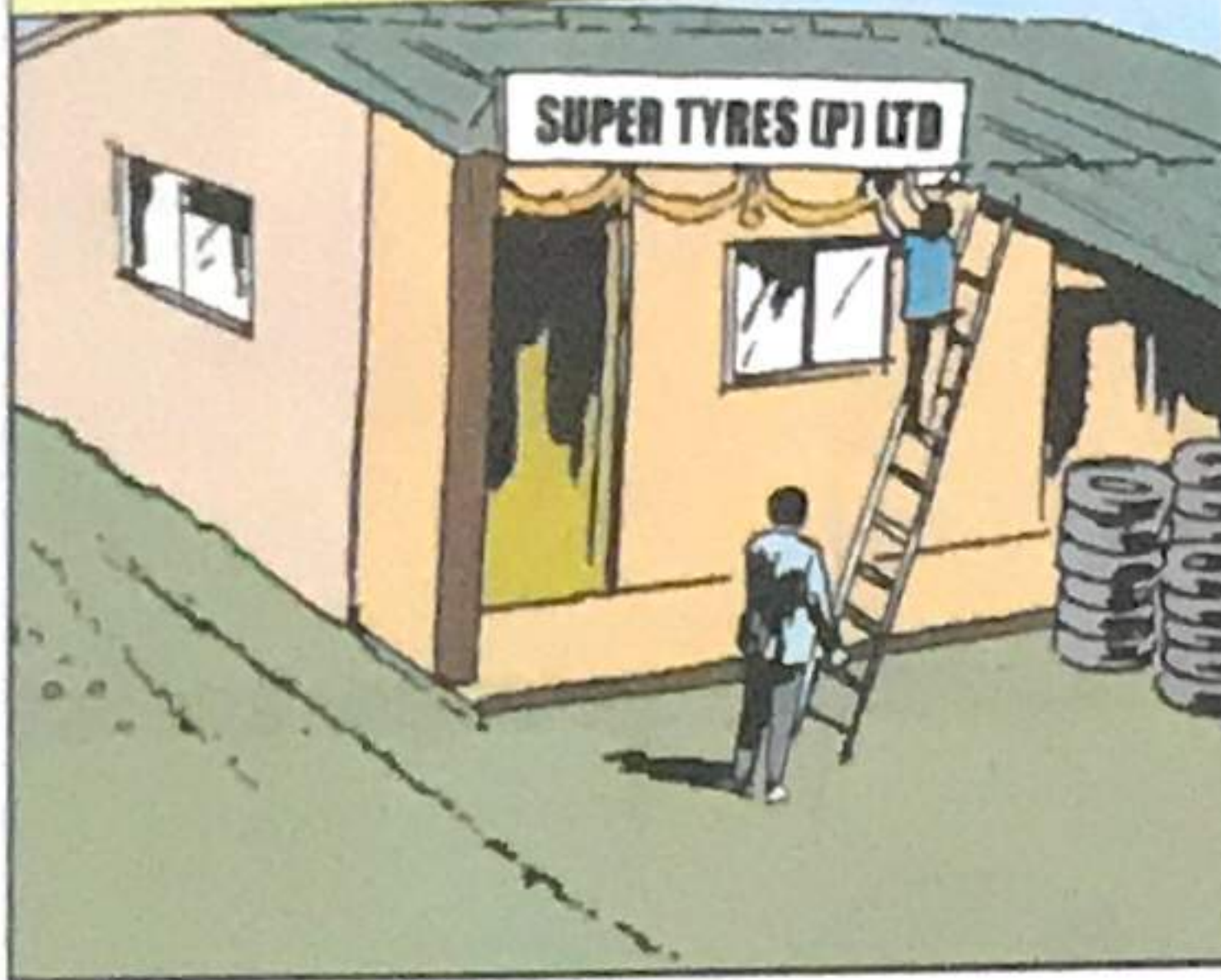
SANYOGITA WAS EXPECTING HER FOURTH CHILD IN MID-1961.

OUCH! THIS BABY REALLY KICKS HARD! MUST BE A BOY.

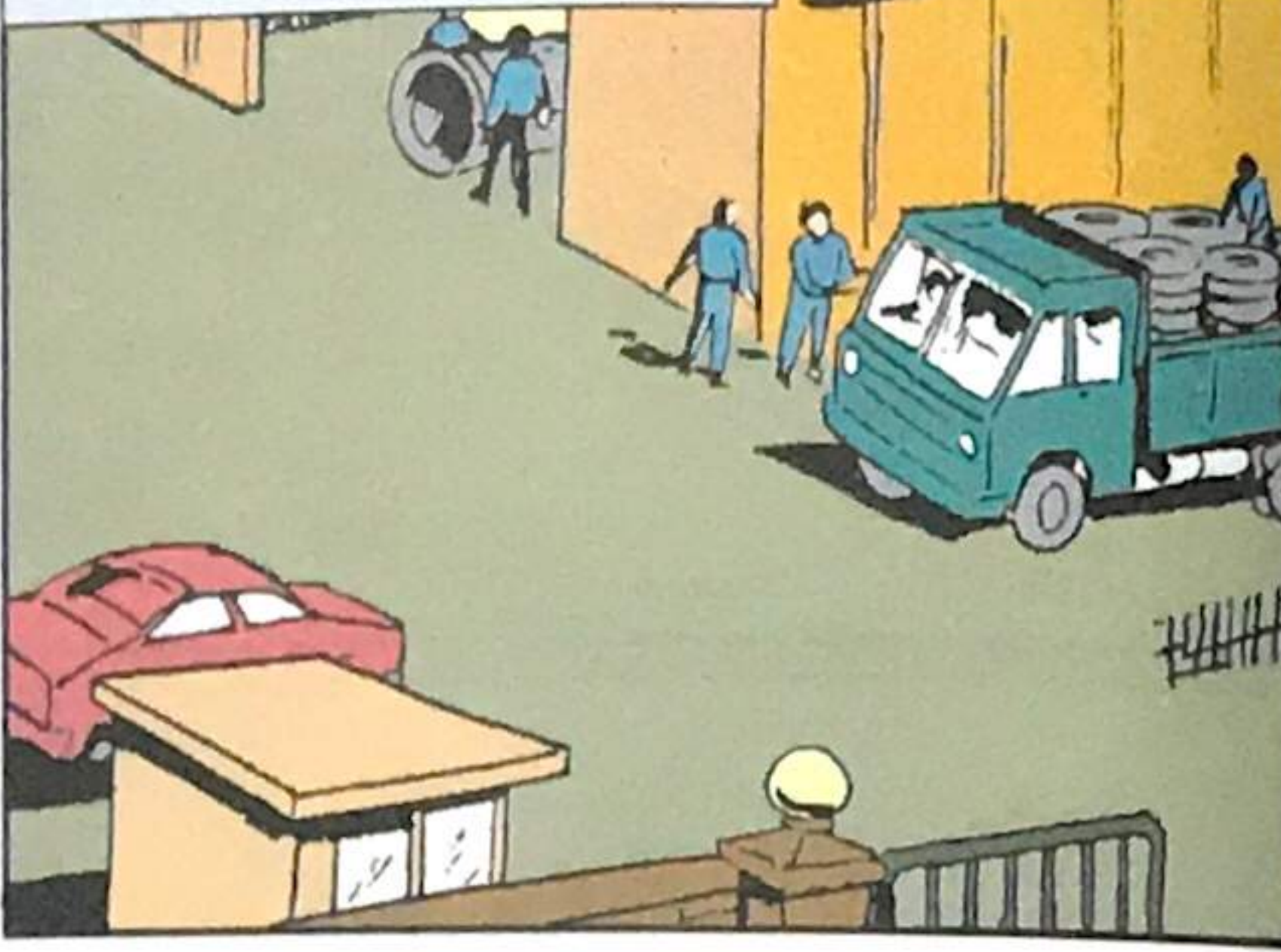




HE FOUND TWO YOUNG ENGINEERS WILLING TO HELP HIM, AND SET UP A FACTORY NEAR KARNAL ON THE GRAND TRUNK ROAD TO DELHI.



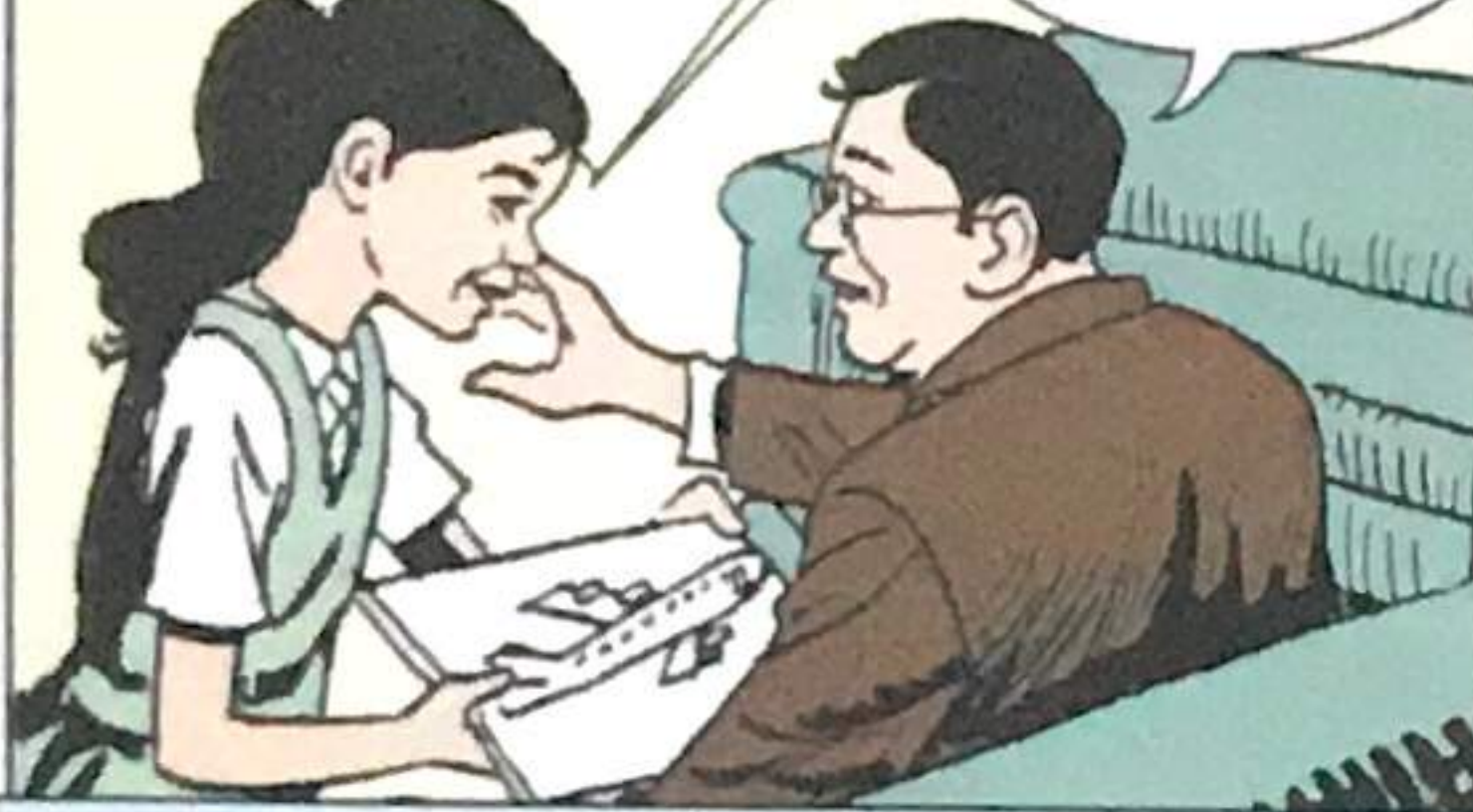
IN 1969, SUPER TYRES PRIVATE LIMITED BEGAN TO FUNCTION AND SOON PROSPER.



MEANWHILE, KALPANA WAS ENJOYING HER STUDIES AT TAGORE BAL NIKETAN SCHOOL.

BHAAJI, LOOK WHAT I DREW IN CLASS TODAY!

A PLANE! HOW NICE, MONTO!



IMITATING HER UNCLES, KALPANA CALLED HER FATHER BHAAJI OR BROTHER, NOT DADDY OR PAPA.

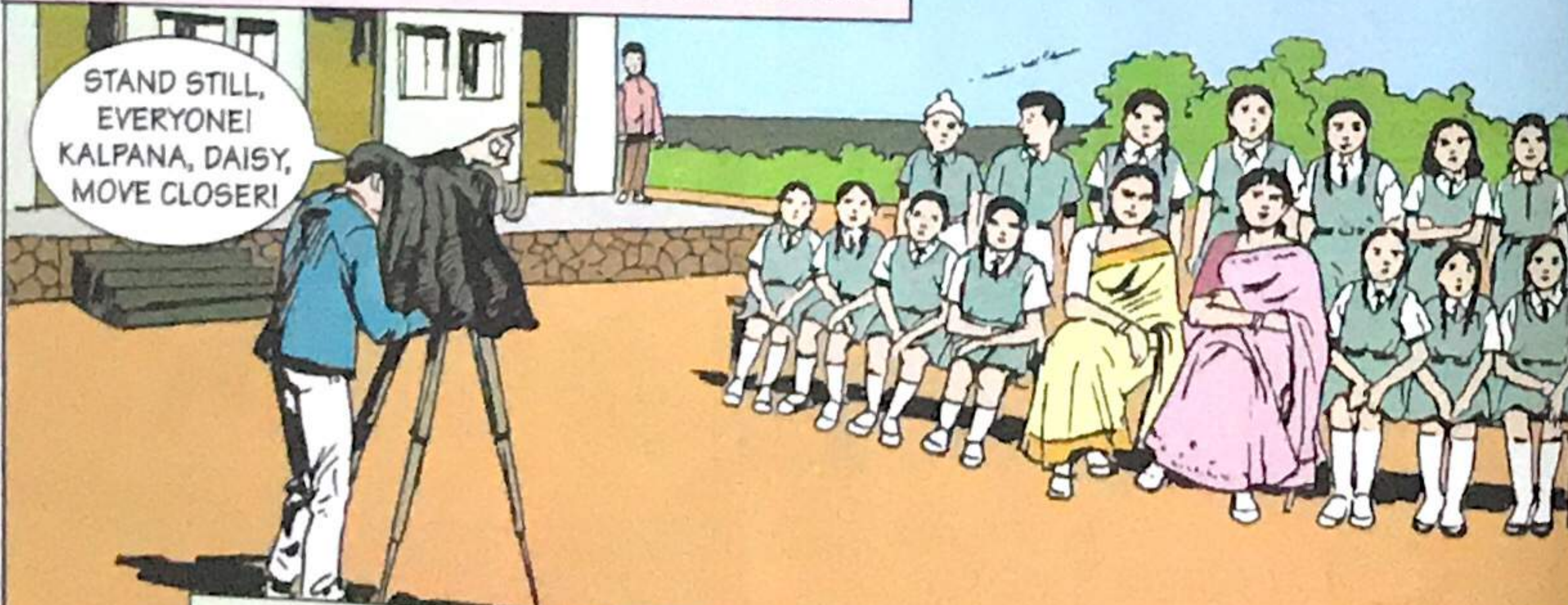
KALPANA WAS A QUIET GIRL, BUT WITH A WILL OF HER OWN. WHILE MOST GIRLS IN HER CLASS HAD NEATLY OILED AND LONG PLAITED HAIR, KALPANA WANTED HER HAIR BOBBED SHORT.



BUT MONTO, THERE IS NO HAIRDRESSER IN KARNAL WHO WILL CUT A GIRL'S HAIR!

WELL, THEN, I SHALL DO IT MYSELF!

HER CLASS PHOTO SHOWS HER WITH HER SHORT HAIRSTYLE.



DAISY WAS KALPANA'S NEIGHBOUR AND BEST FRIEND TOO. THEY WERE ALWAYS TOGETHER.

IN THE TENTH STANDARD, THE GIRLS WERE ASSIGNED A SCIENCE PROJECT.



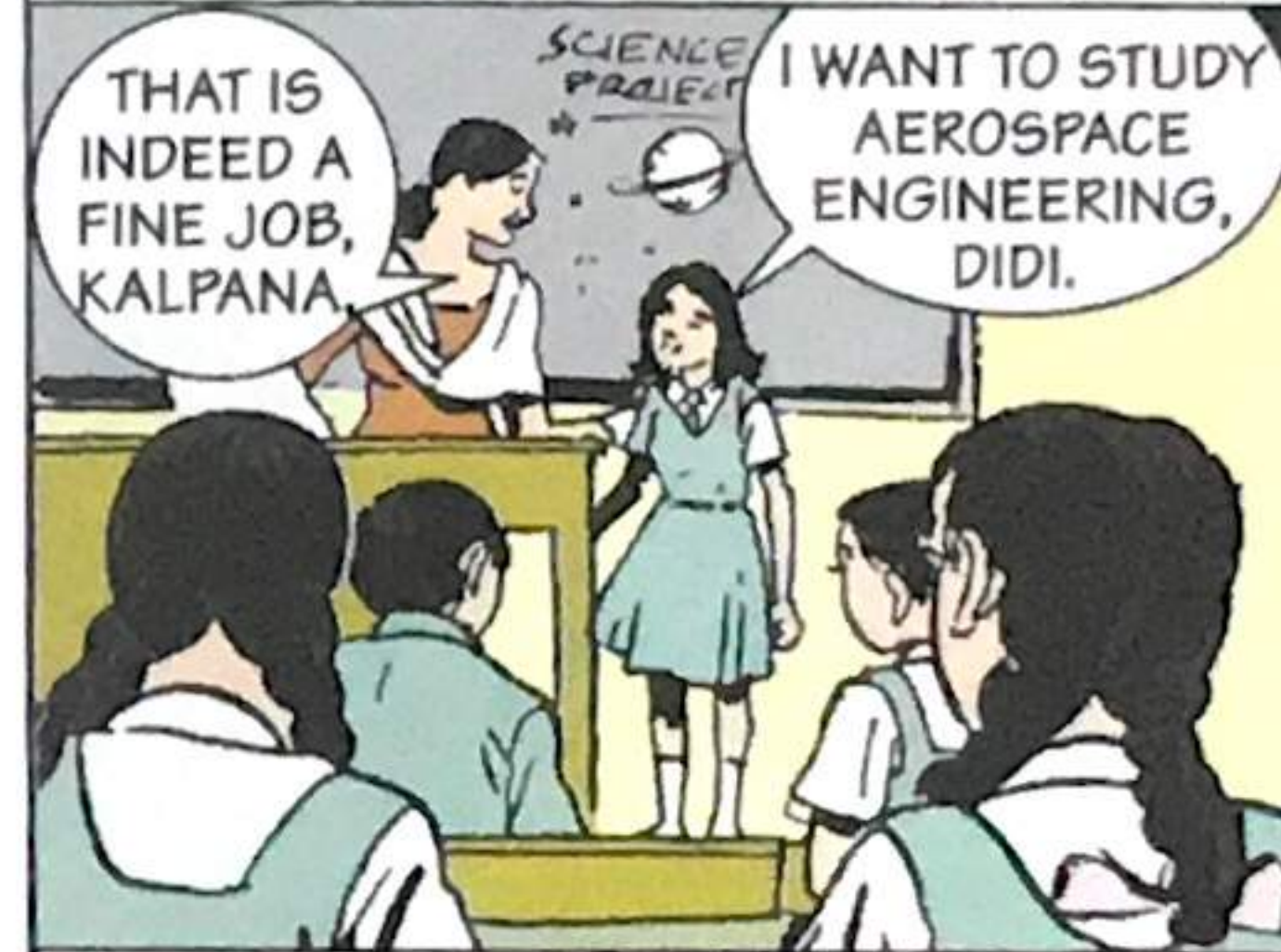
ISN'T IT EXCITING? WE CAN DO CHARTS AND DRAWINGS ON OUR FAVOURITE TOPIC!

KALPANA WAS QUIVERING WITH EXCITEMENT. SHE HAD SEEN PICTURES OF THE VIKING MISSION IN THE 'ILLUSTRATED WEEKLY OF INDIA'.



THIS WAS PERHAPS HER FIRST LINK TO SPACE SCIENCE.

KALPANA'S COLOURFUL CHART DEPICTING SPACE WAS QUITE IMPRESSIVE AND SO WAS HER PAPER ON THE VIKING MISSION.

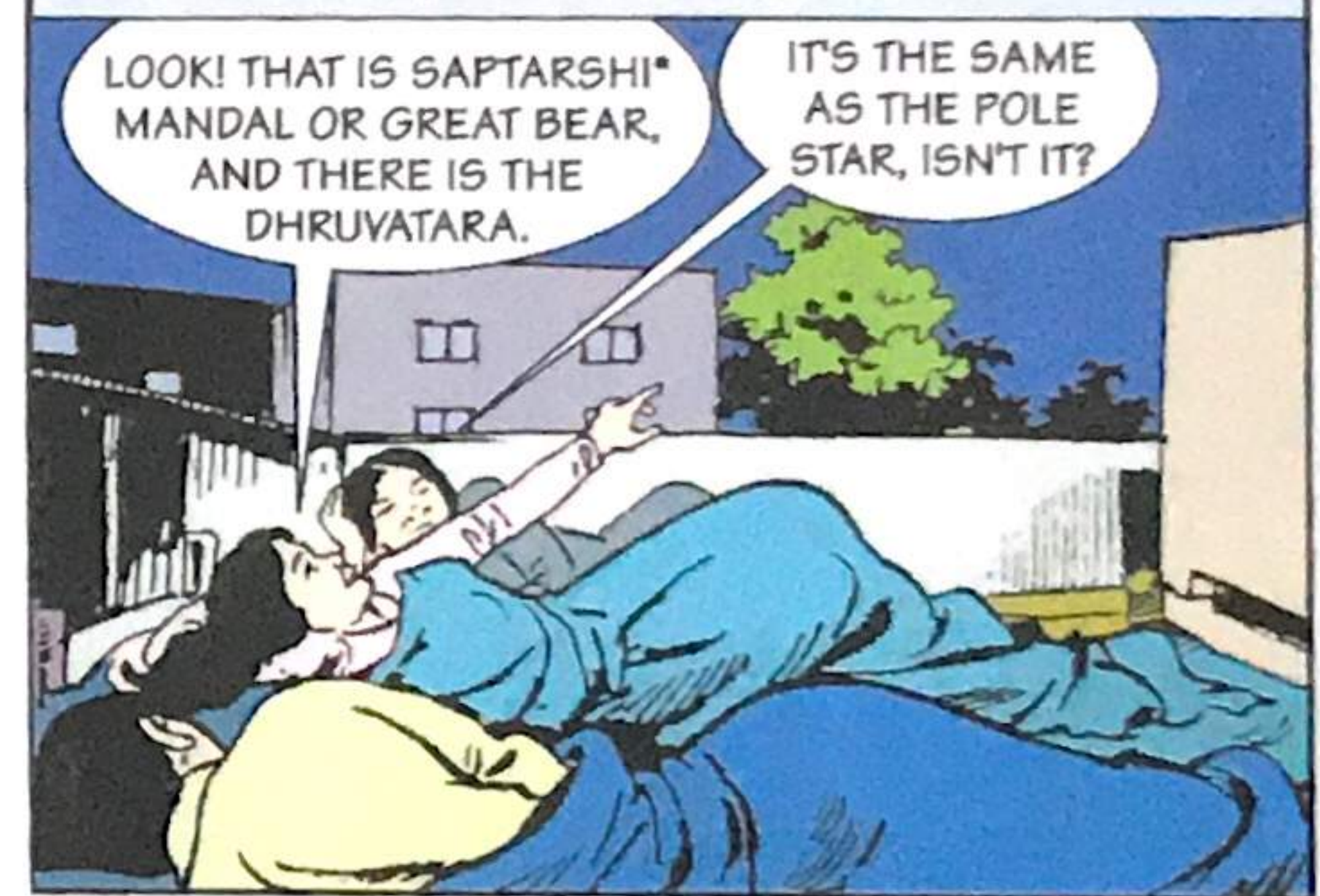


THAT IS INDEED A FINE JOB, KALPANA.

I WANT TO STUDY AEROSPACE ENGINEERING, DIDI.

IN TAGORE BAL NIKETAN, STUDENTS CALLED THEIR TEACHERS 'DIDI' OR 'OLDER SISTER' UNLIKE THE USUAL FORM OF ADDRESS 'MISS' OR 'MADAM' IN MOST URBAN SCHOOLS.

DURING THE SUMMER MONTHS, THE FAMILY OFTEN SLEPT OUTDOORS, UNDER THE STARRY SKIES.



LOOK! THAT IS SAPTARSHI* MANDAL OR GREAT BEAR, AND THERE IS THE DHRYUATARA.

IT'S THE SAME AS THE POLE STAR, ISN'T IT?

HER BROTHER SANJAY WAS A GOOD FRIEND AND LISTENER.



DO YOU KNOW HOW TO DIFFERENTIATE STARS FROM PLANETS? STARS, TWINKLE, PLANETS DON'T.

I FIND PLANETS VERY EXCITING!



SHALL I TELL YOU A SECRET? I LOVE TO IMAGINE GOING UP TO MARS, WITH OUR OWN LITTLE SPACESHIPS! WHAT FUN IT WOULD BE!

YES, DON'T WE ALL KNOW HOW EXCITED YOU WERE ABOUT THE VIKING CHART YOU MADE!

*SAPTA RISHI OR 'SEVEN SAGES', THE INDIAN NAME FOR THE GREAT BEAR CONSTELLATION

SANJAY AND KALPANA OFTEN CYCLED PAST THE FLYING CLUB OF KARNAL, ONE OF THE TWELVE IN THE COUNTRY.

HOW GREAT THOSE LITTLE PLANES LOOK! LIKE LITTLE RED AND YELLOW BIRDS.

THEY ARE TRAINER AIRCRAFTS. MAYBE WE CAN GET A RIDE ON THEM.

HARYANA INSTITUTE CIVIL AVIATION

IT WAS ONE OF THE MOST EXCITING MOMENTS IN YOUNG KALPANA'S LIFE WHEN SHE FOUND HERSELF UP IN THE SKY ON A GLIDER RIDE ARRANGED BY HER FATHER.

THIS IS AMAZING! UNBELIEVABLE!

KALPANA WAS A BUNDLE OF EXCITEMENT, EAGER TO SHARE HER BOUNDLESS JOY.

OH! DID!! I HAD THE GREATEST ADVENTURE!! I FLEW ON A PLANE! HIGH UP IN THE SKY.

AHH! GOOD FOR YOU! NOW, CAN WE COME BACK TO EARTH AND STUDY SOME GEOGRAPHY.

KALPANA PARTICIPATED IN ALL THE ACTIVITIES THAT THE SCHOOL ORGANISED TO ENSURE AN ALL-ROUND DEVELOPMENT OF THE STUDENTS. SHE WROTE POETRY.

SHE TOOK PART IN SCHOOL DANCES.

ANNUAL DAY

IN SPORTS, SHE WAS VERY FAST ON HER FEET.

IN THE 100-METRE SPRINT, THE FIRST PRIZE GOES TO KALPANA CHAWLA

SHE LOVED PLAYING ENERGETIC OUTDOOR GAMES, LIKE VOLLEYBALL.

HEY CATCH IT, BUTTER FINGERS!

SHE WAS QUITE INTERESTED IN THE LATEST FASHIONS. A FAREWELL FUNCTION WAS ARRANGED FOR THE STUDENTS PASSING OUT FROM SCHOOL -

YET SHE COULD BE QUITE CASUAL ABOUT HER APPEARANCE TOO. AT SUNITA'S WEDDING -

KALPANA! YOU'VE BEEN WEARING THE SAME DRESS FOR THREE DAYS!

HEY, KALPANA! WHAT ARE YOU WEARING?

THEY ARE CALLED BELL-BOTTOM PANTS! AREN'T THEY SMART?

SO? I DON'T CARE! WHY SHOULD ANYONE ELSE?

AFTER GRADUATING FROM HIGH SCHOOL, SHE HAD TO JOIN A COLLEGE FOR THE PRE-UNIVERSITY COURSE OF THE ELEVENTH AND TWELFTH STANDARDS.

IN THE ELEVENTH STANDARD, WHEN THE STUDENTS CHOSE THEIR PARTICULAR BRANCH OF STUDY -

WHAT ARE YOU PLANNING TO DO?

GO TO D.A.V. COLLEGE FOR WOMEN.

I AM GOING TO STUDY AEROSPACE ENGINEERING.

HER SISTERS, SUNITA AND DEEPA, HAD STUDIED THERE.

IN THE PRE-UNIVERSITY COURSES AT DAY COLLEGE, SHE LOVED THE MATHS AND SCIENCE CLASSES.

DURING A MATHEMATICS CLASS, THE TEACHER SWARN ARORA WAS EXPLAINING A NULL SET IN MODERN ALGEBRA.

Set is symbolised as

\emptyset or $\{\}$

TODAY WE WILL STUDY NULL SETS. A NULL SET IS AN EMPTY SET, A SET THAT DOES NOT CONTAIN ANYTHING.

SHE TOOK HER STUDIES SERIOUSLY AND COULD EASILY GRASP COMPLEX CONCEPTS.

AN INDIAN WOMAN ASTRONAUT IS A NULL SET. THERE IS NO ONE IN THAT CATEGORY.

WHO KNOWS, MADAM! SOME DAY SOON, THAT MAY NO LONGER BE A NULL SET.

KALPANA LOVED GARDENING AND DESIGNED THE GARDENS IN THEIR HOUSE WITH 40 DIFFERENT FLOWER-BEDS AND LOOKED AFTER THEM ZEALOUSLY. DURING A WEDDING FEAST, THE CATERERS SET UP STOVES IN THE GARDEN. WHEN KALPANA CAME HOME FROM COLLEGE SHE WAS FURIOUS.

MOVE THE STOVES OUT AT ONCE! MY FLOWERS ARE MORE IMPORTANT THAN FEEDING GUESTS.

WHERE'S KALPANA? I HAVE TO GIVE HER THESE BOOKS!

THERE SHE IS! THE ONLY GIRL ON CAMPUS IN PANTS AND A T-SHIRT!

IN 1977, SHE JOINED DYAL SINGH COLLEGE IN KARNAL.

SO, MONTO, YOU WILL JOIN ME IN MY WORK, I HOPE.

I DARE NOT TELL BHAAJI WHAT I WANT TO DO. HE WILL NEVER AGREE.

IN THE PRE-ENGINEERING COLLEGE EXAM, SHE DID QUITE WELL.

452 OUT OF 600!

NOW I CAN APPLY TO THE ENGINEERING COLLEGE IN CHANDIGARH.

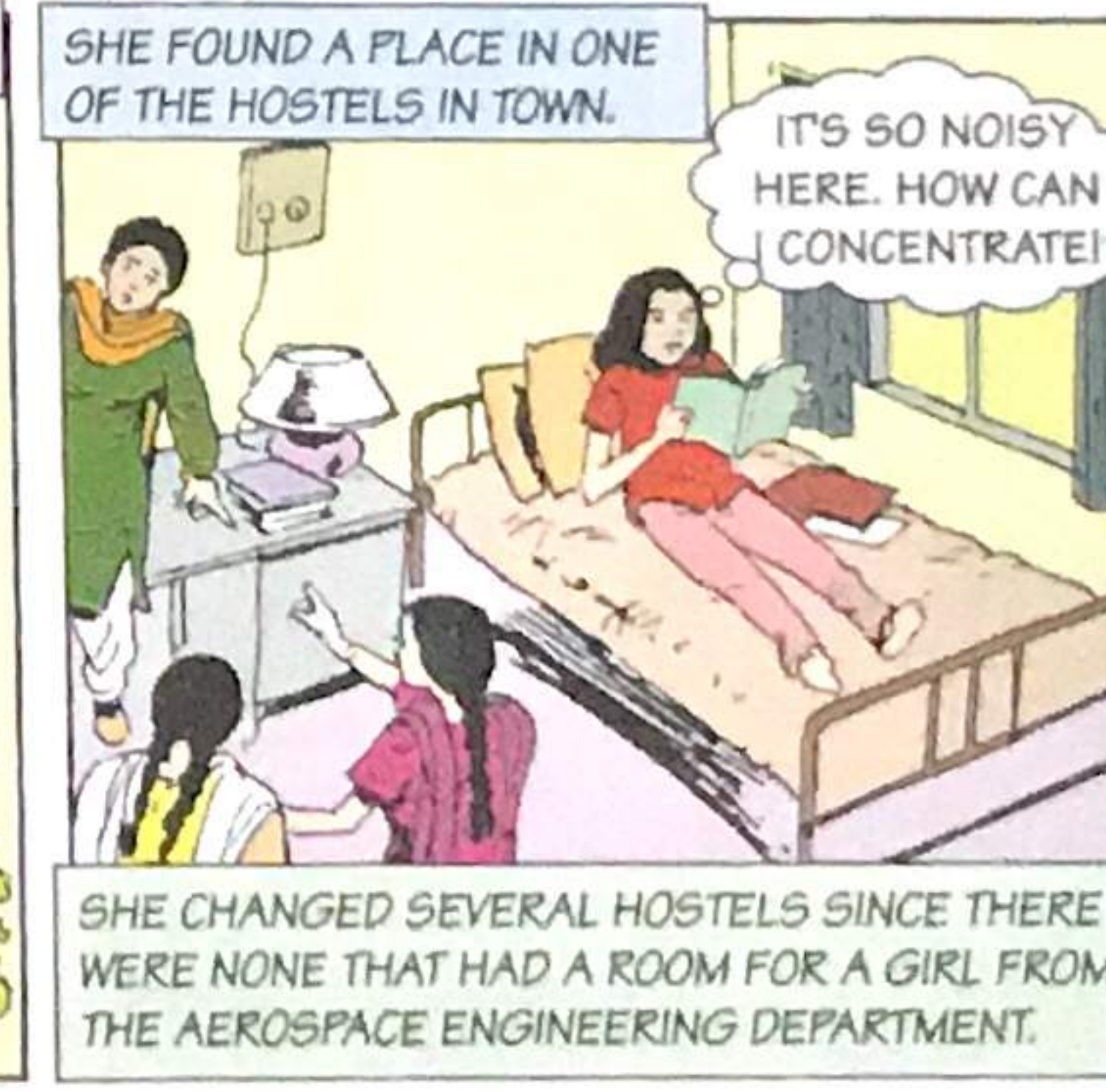
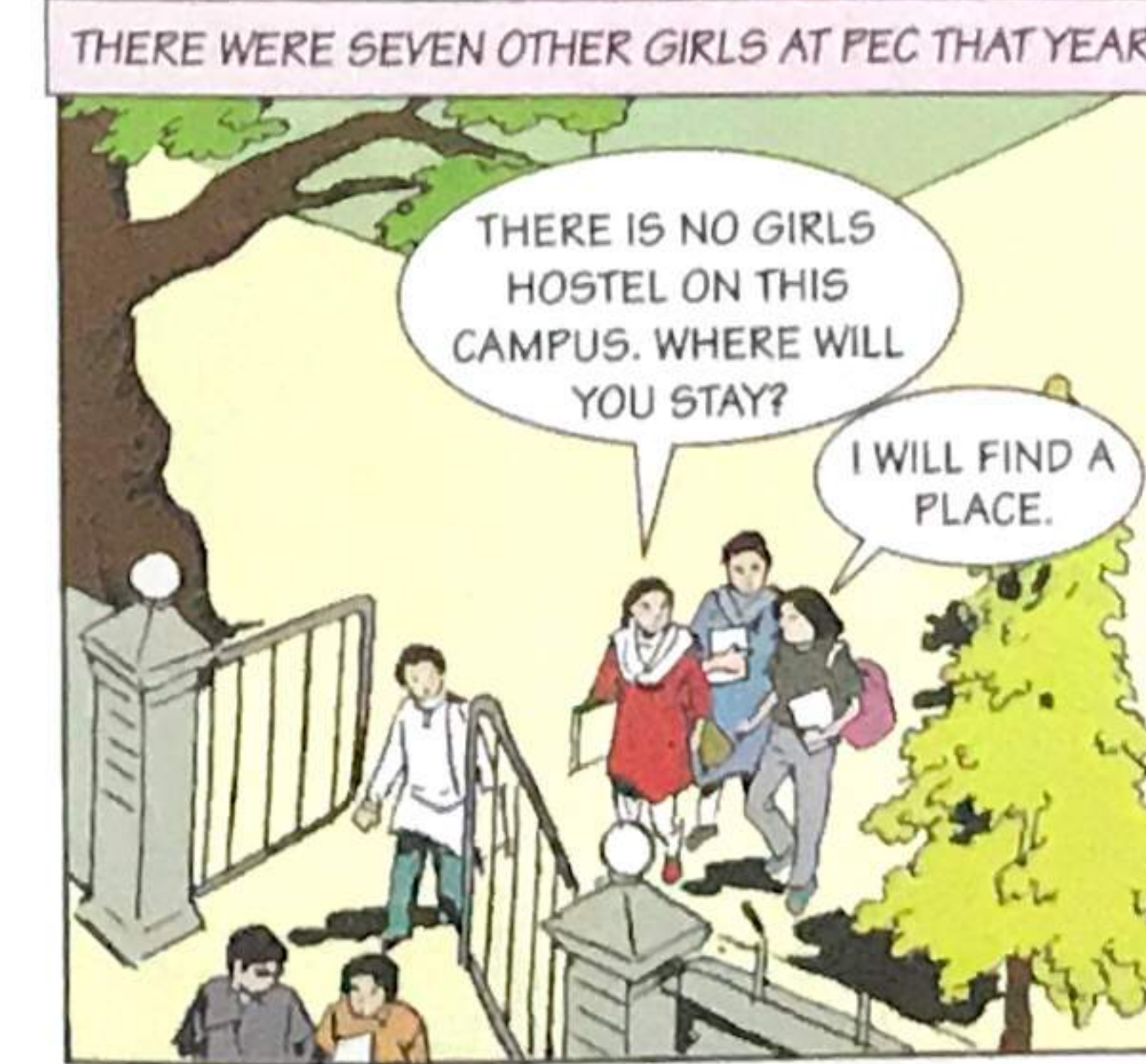
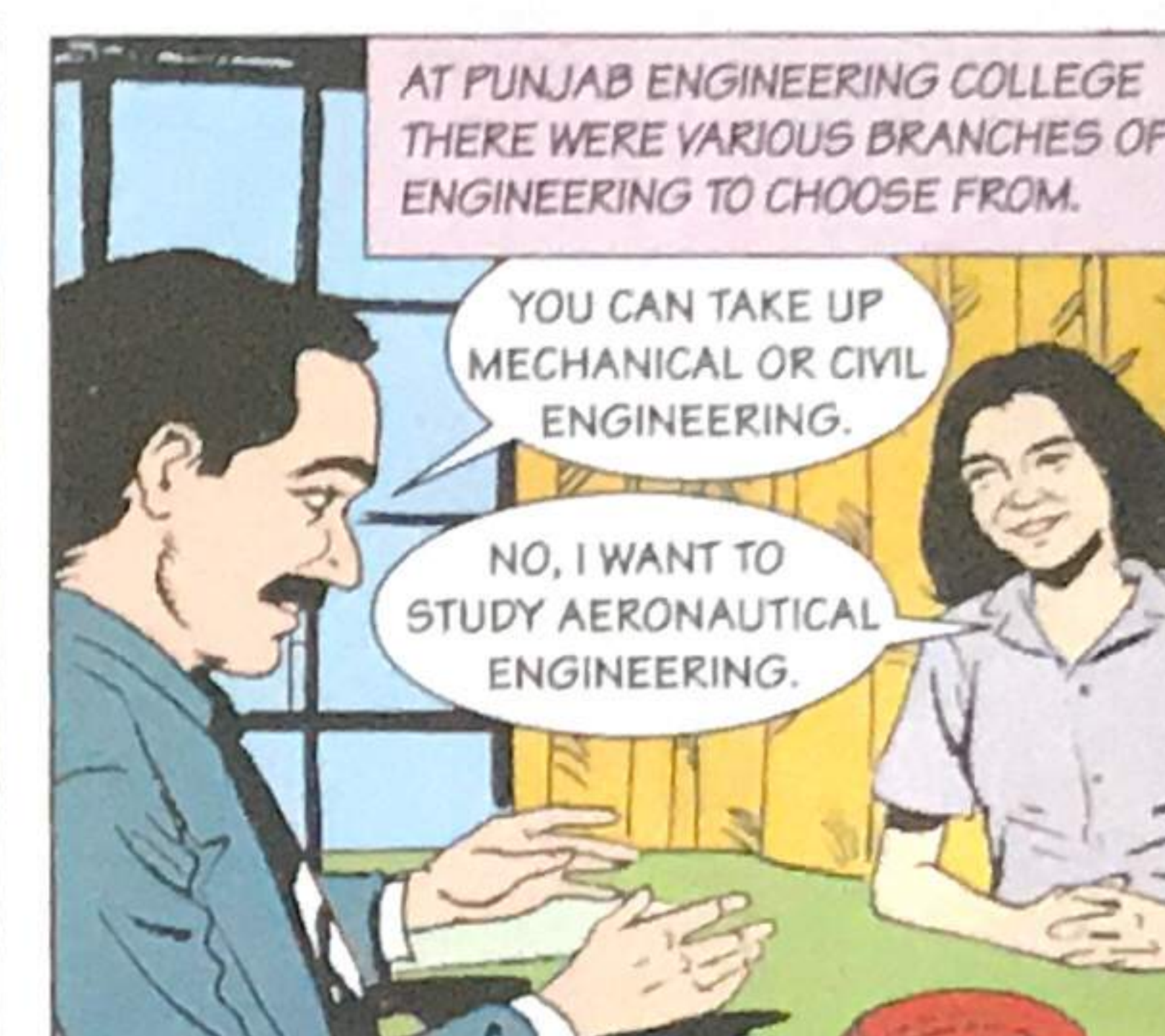
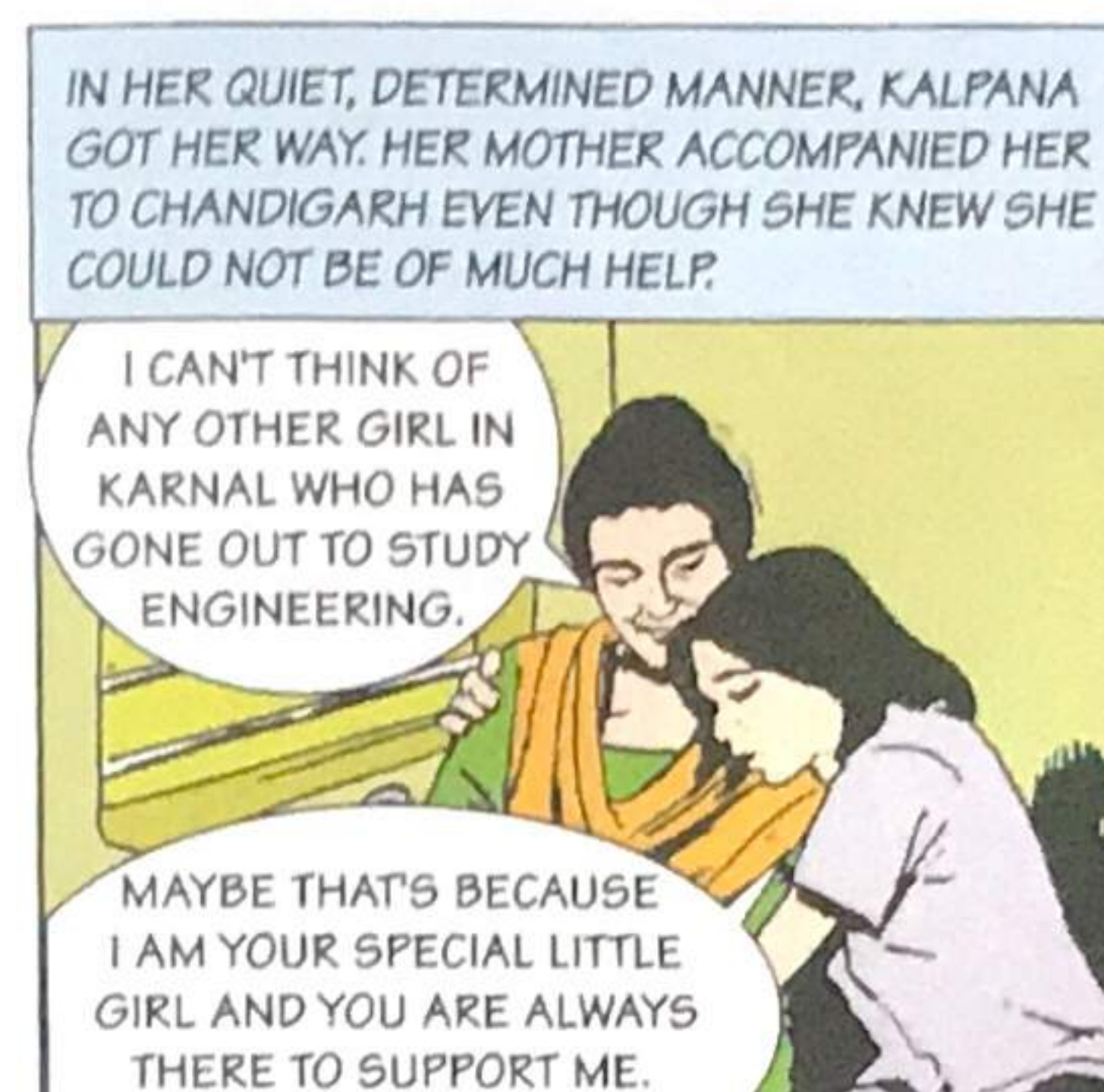
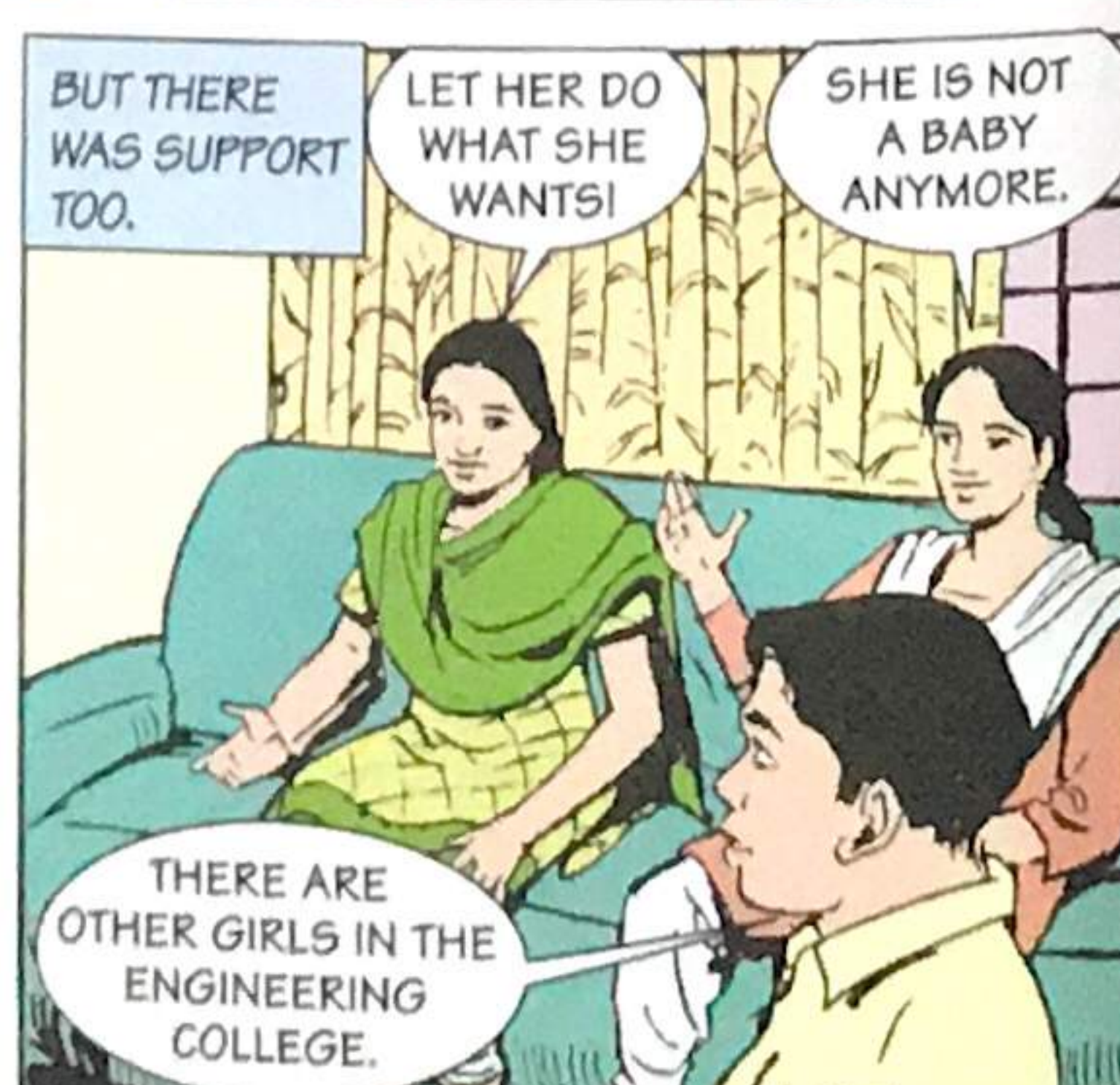
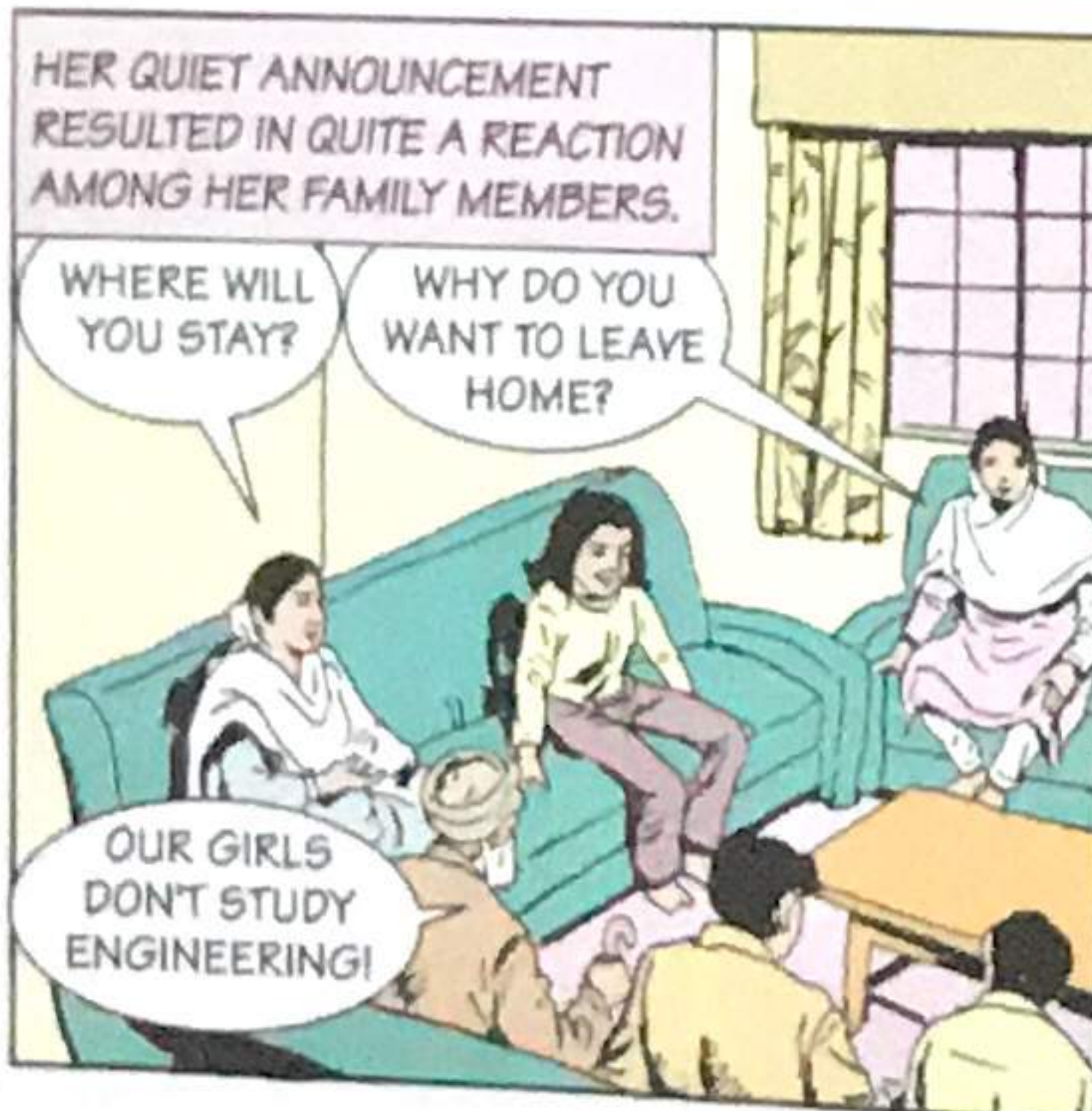
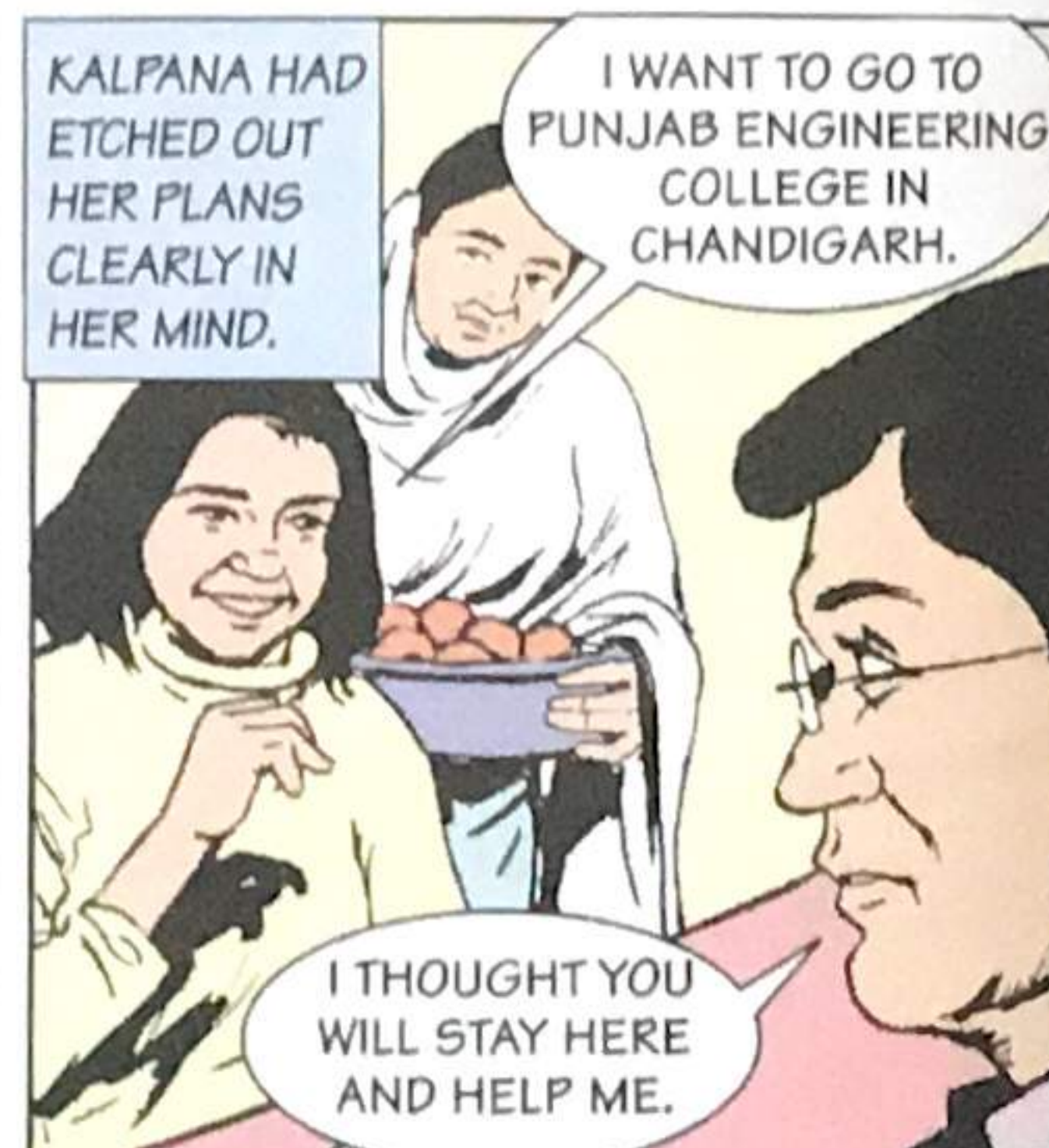
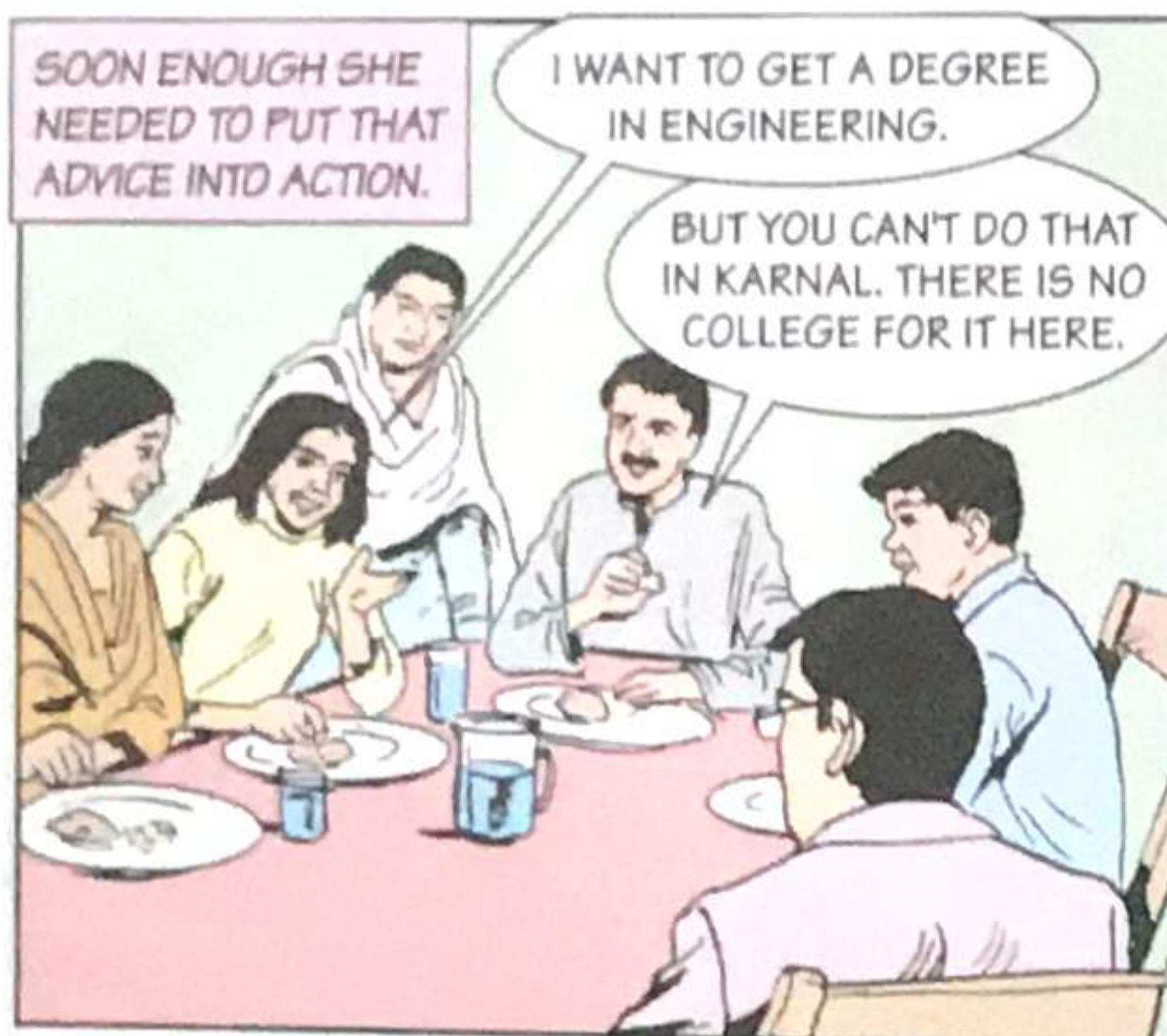
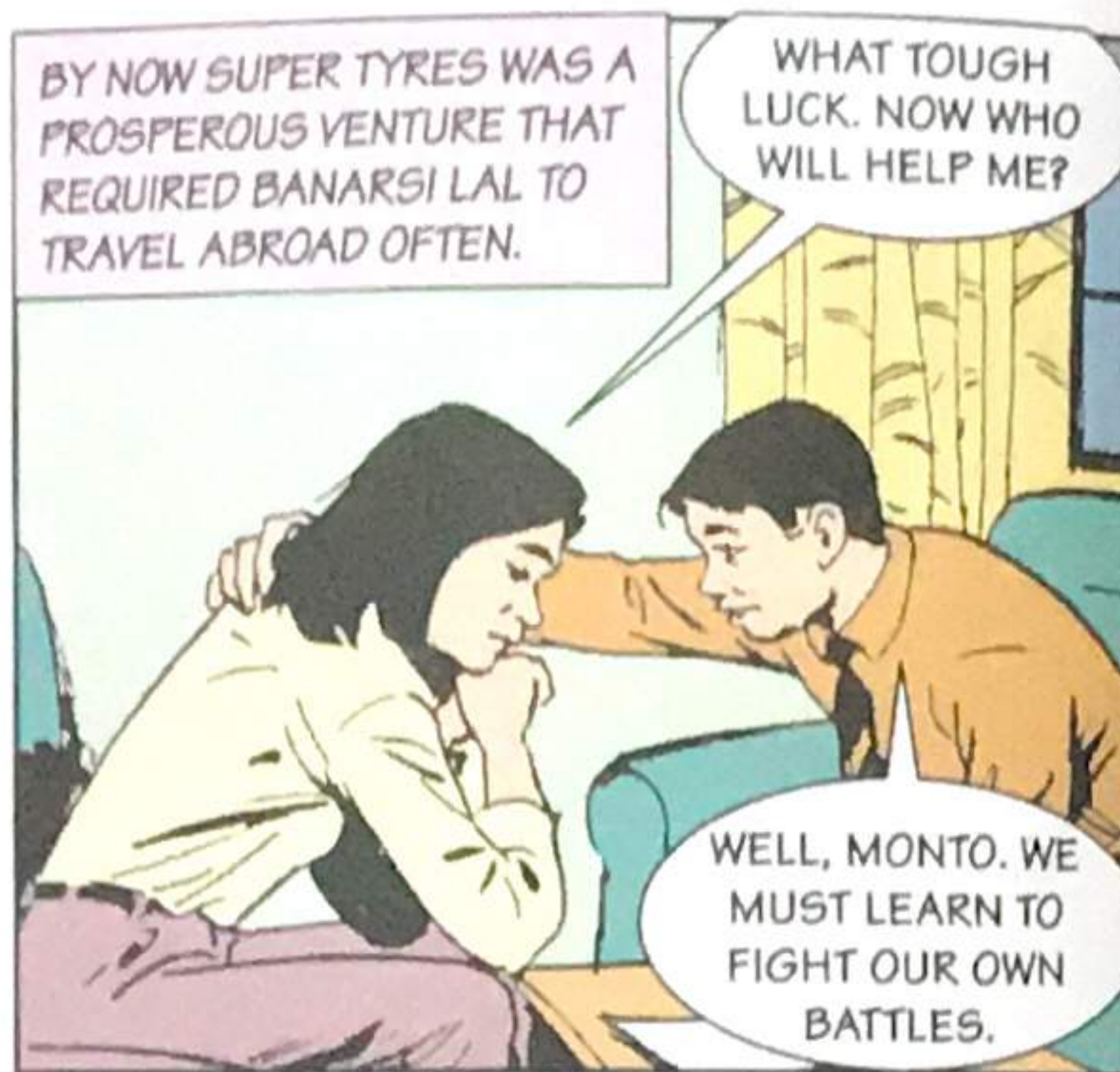
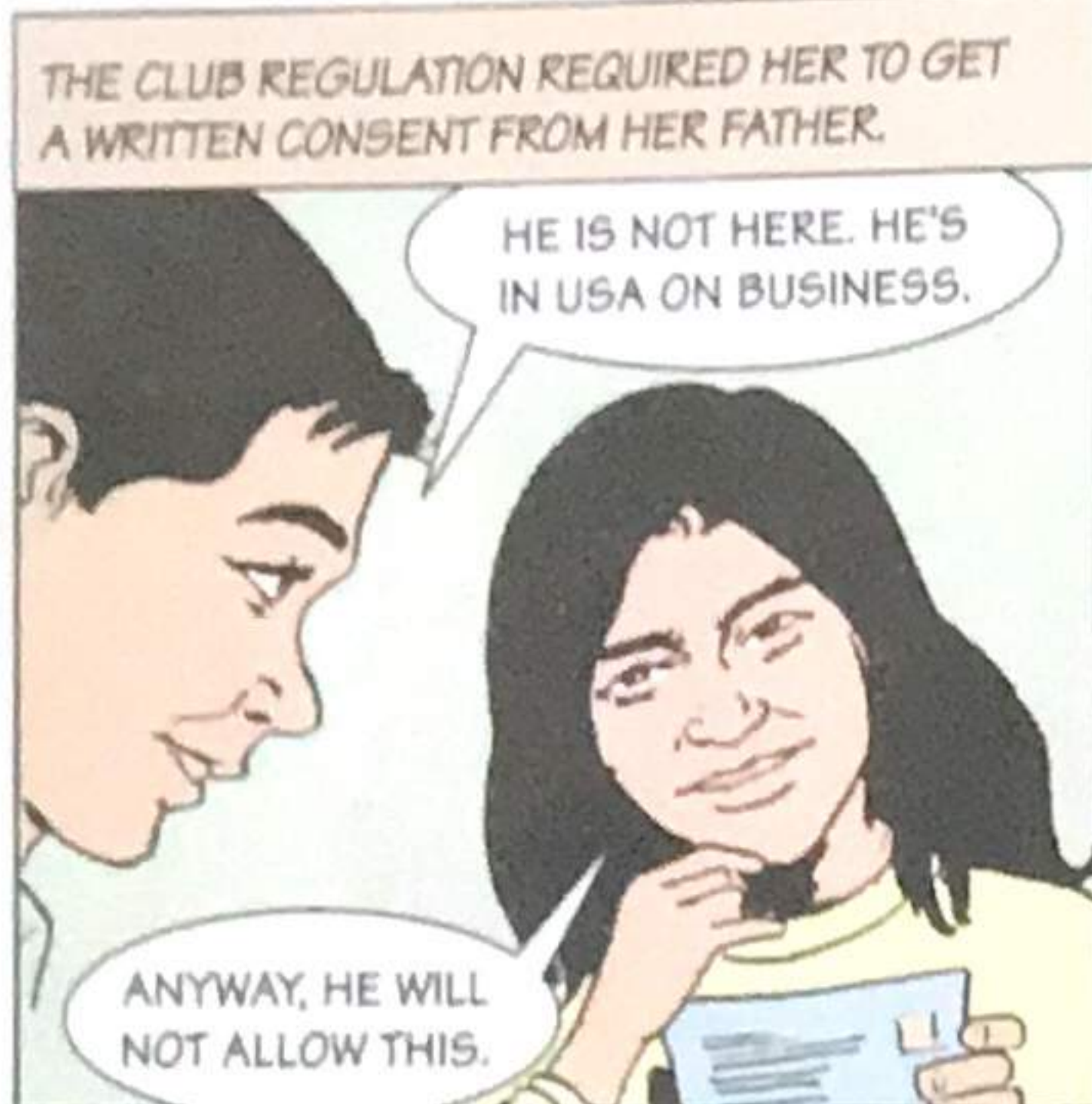
HER BROTHER, SANJAY, HAD MEANWHILE JOINED THE LOCAL FLYING CLUB.

IT'S SUCH FUN! EVERYONE AT THE CLUB TALKS ABOUT FLIGHTS AND PLANES.

I WISH I COULD JOIN.

BUT WE DO NOT HAVE ANY LADY MEMBERS.

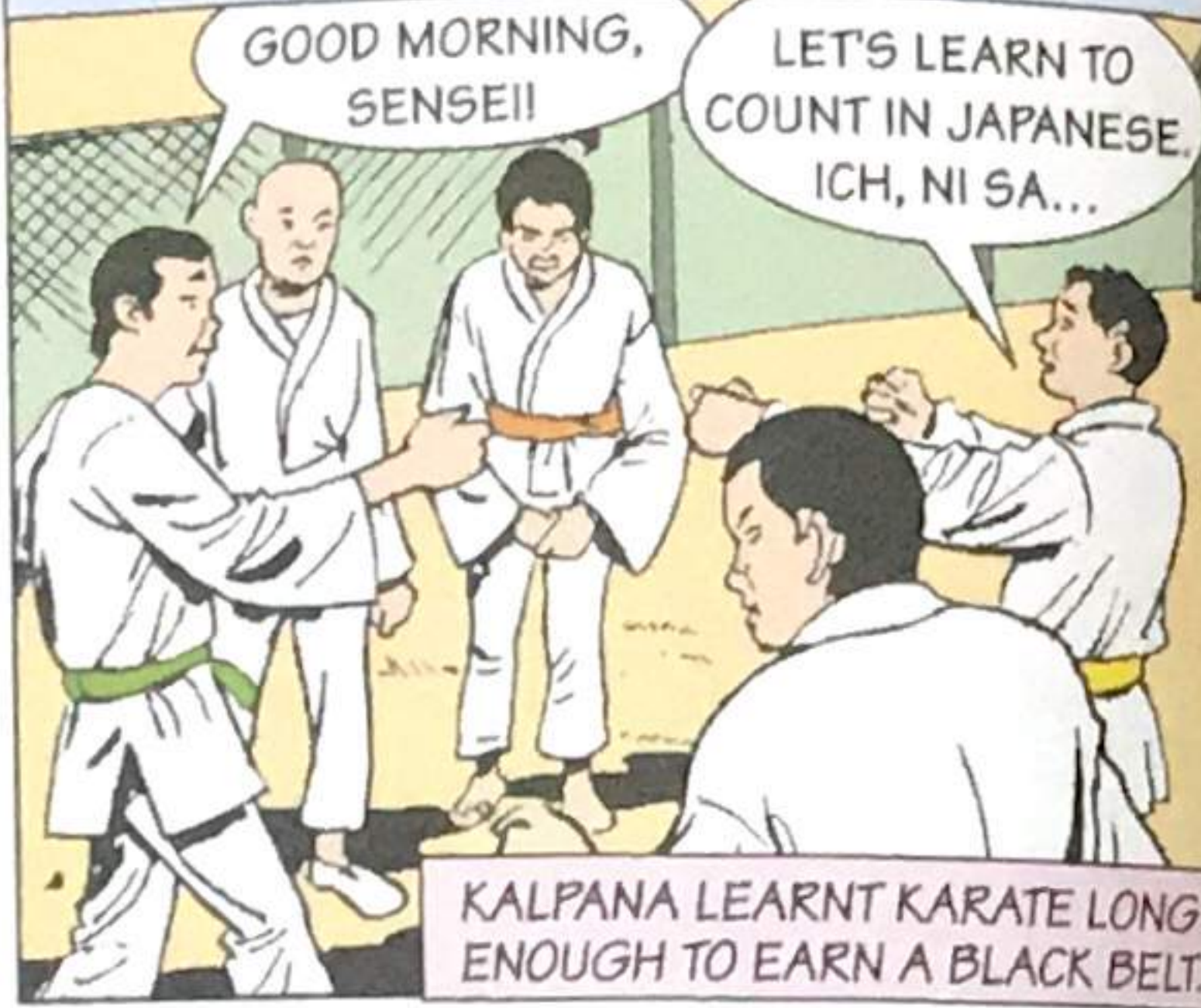
THERE IS ALWAYS A FIRST TIME.



IN THE END SHE FOUND A ROOM OVER A GARAGE.



BESIDES STUDIES, SHE FOUND TIME FOR MANY OTHER THINGS LIKE LEARNING KARATE.



SHE LOVED TO CURL UP WITH A GOOD BOOK AND TRIED TO PERSUADE OTHERS TO SHARE HER PASSION.



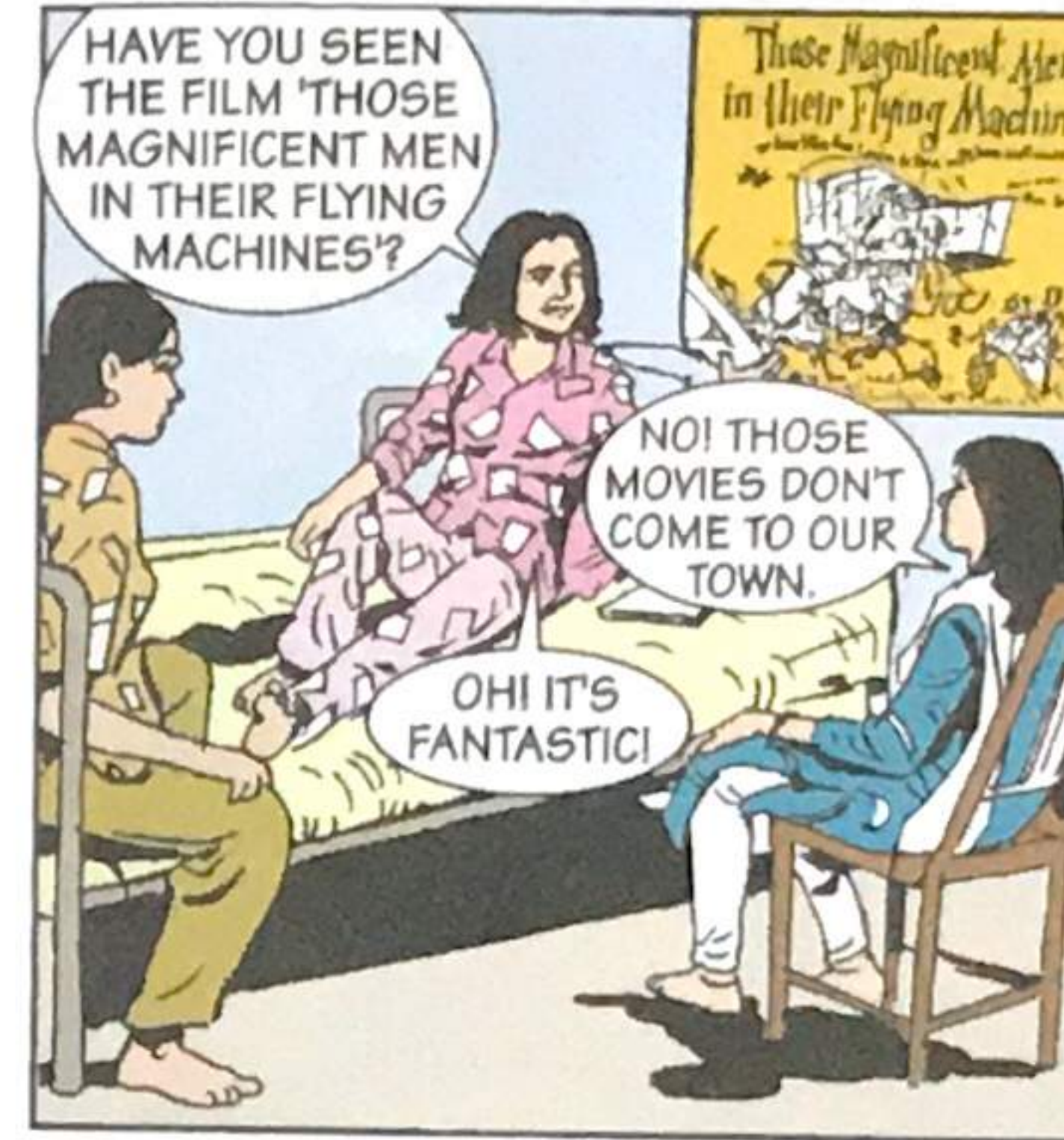
LET ME SHOW YOU MY STONE COLLECTION.



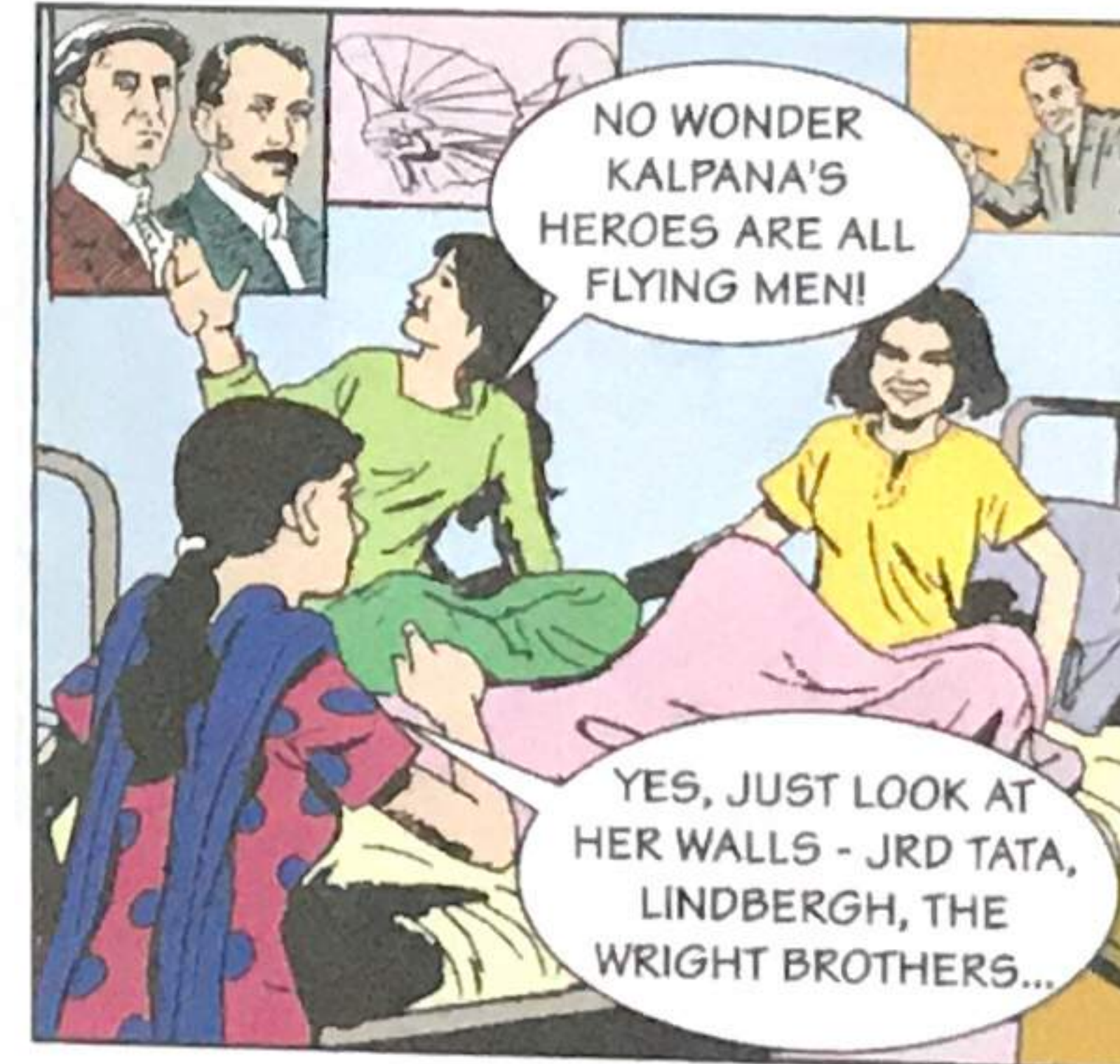
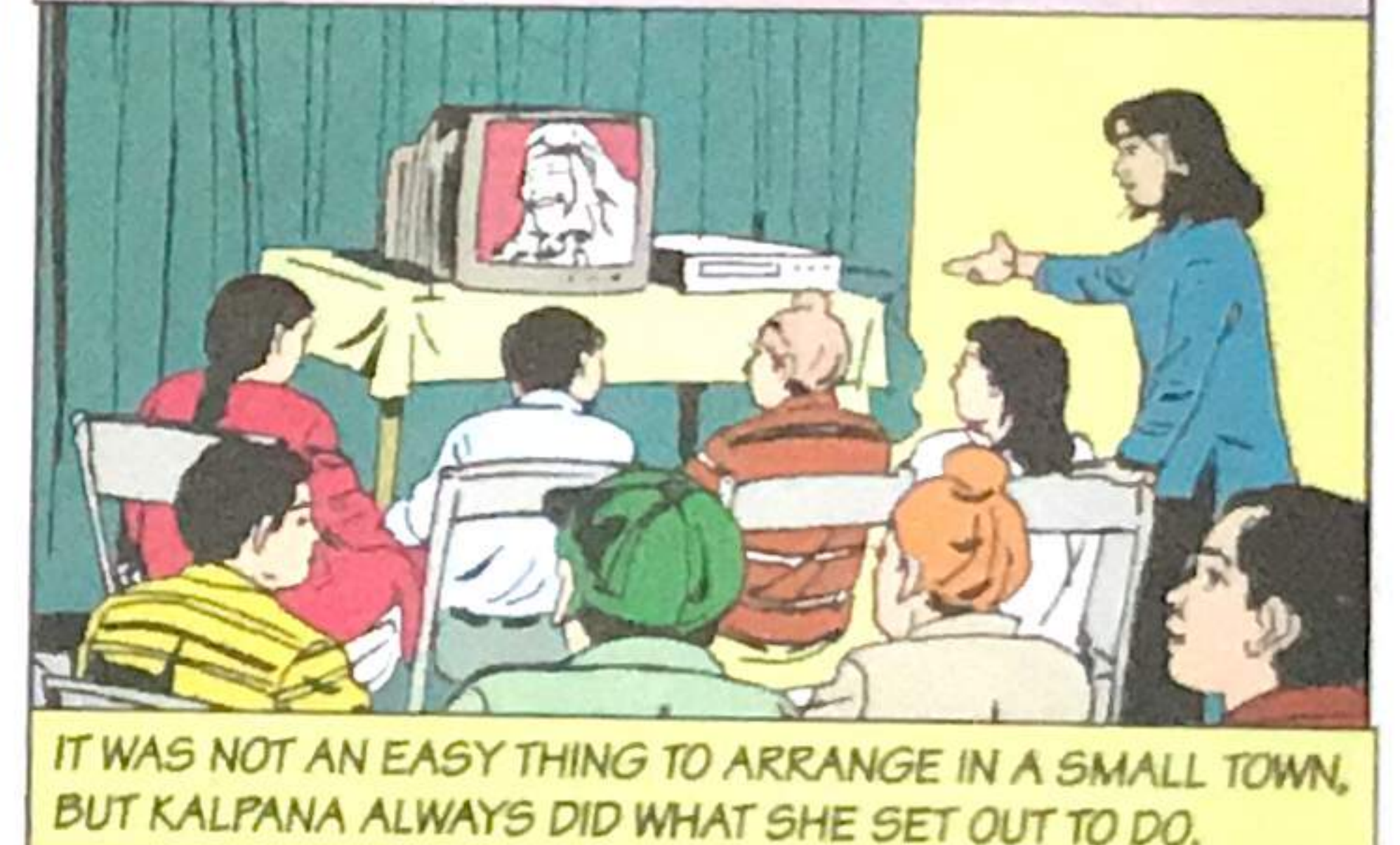
SHE DID WRITE AN ARTICLE THAT WAS PUBLISHED IN THE COLLEGE MAGAZINE, 'PECMAG'.



KALPANA WAS FASCINATED BY MANY SUBJECTS.



KALPANA HIRED A VIDEO CASSETTE AND A PLAYER TO PROJECT THE FILM IN A NEARBY RESTAURANT AND ORGANISED A SPECIAL SHOW FOR ALL HER CLASSMATES.

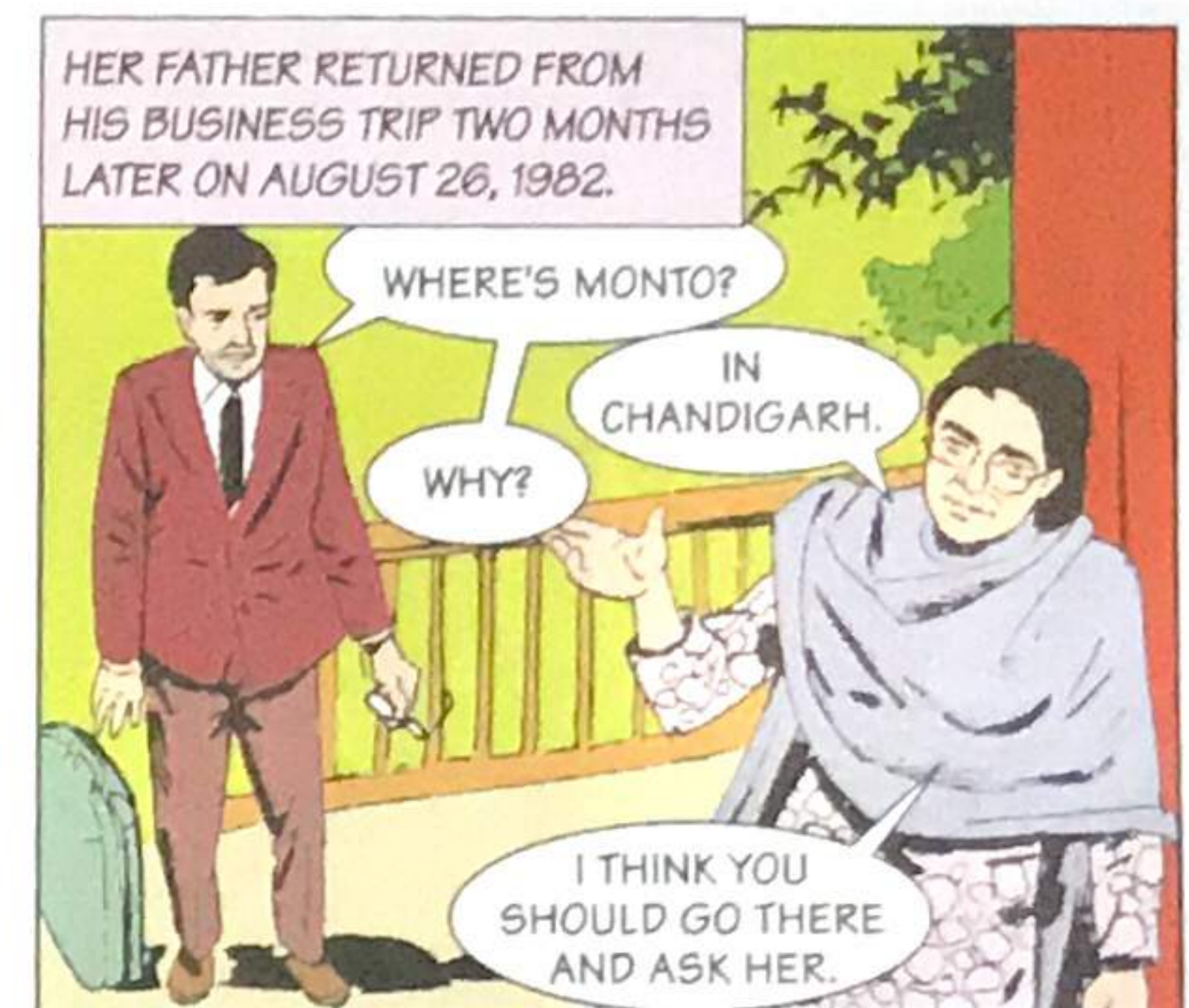
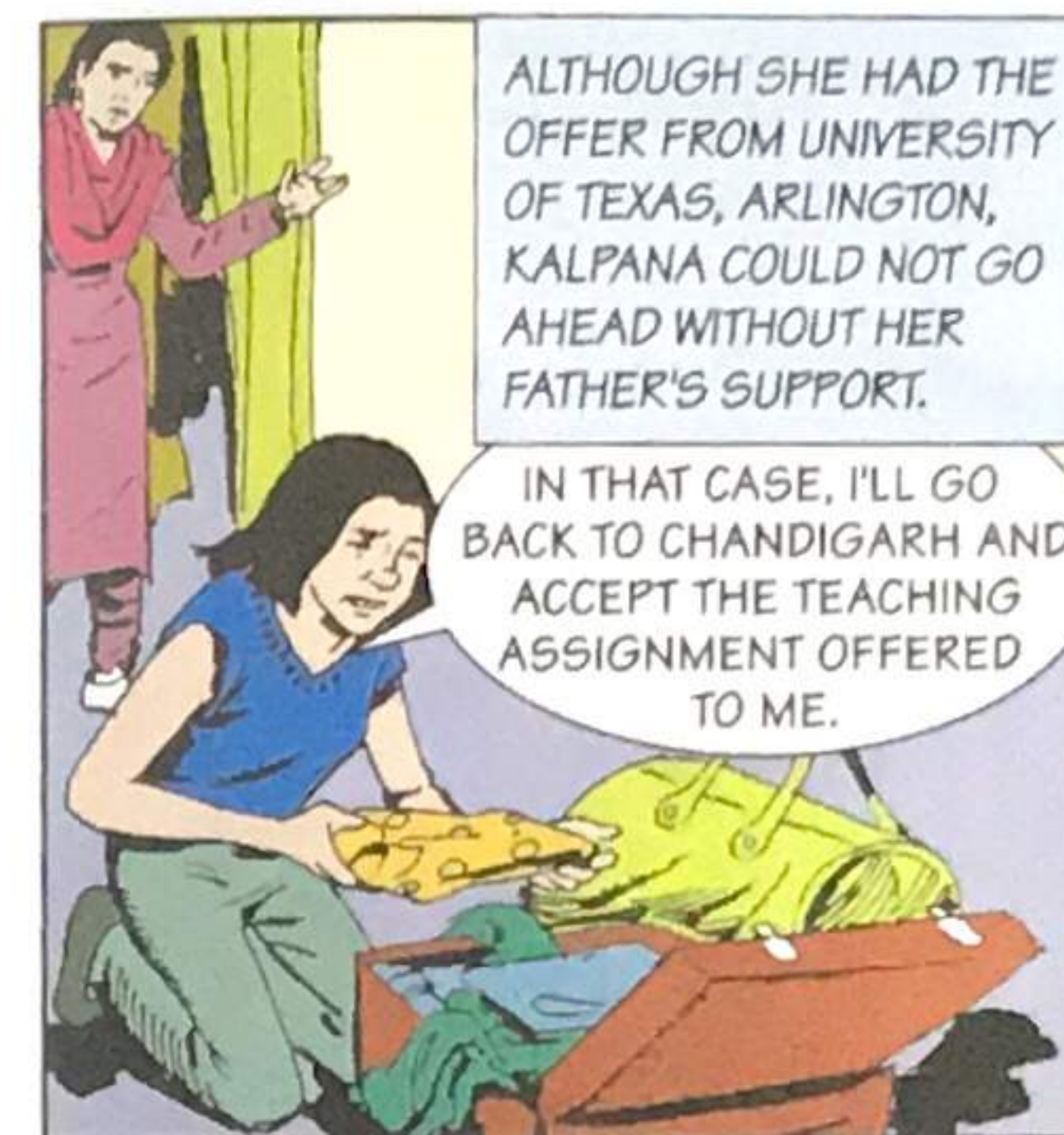
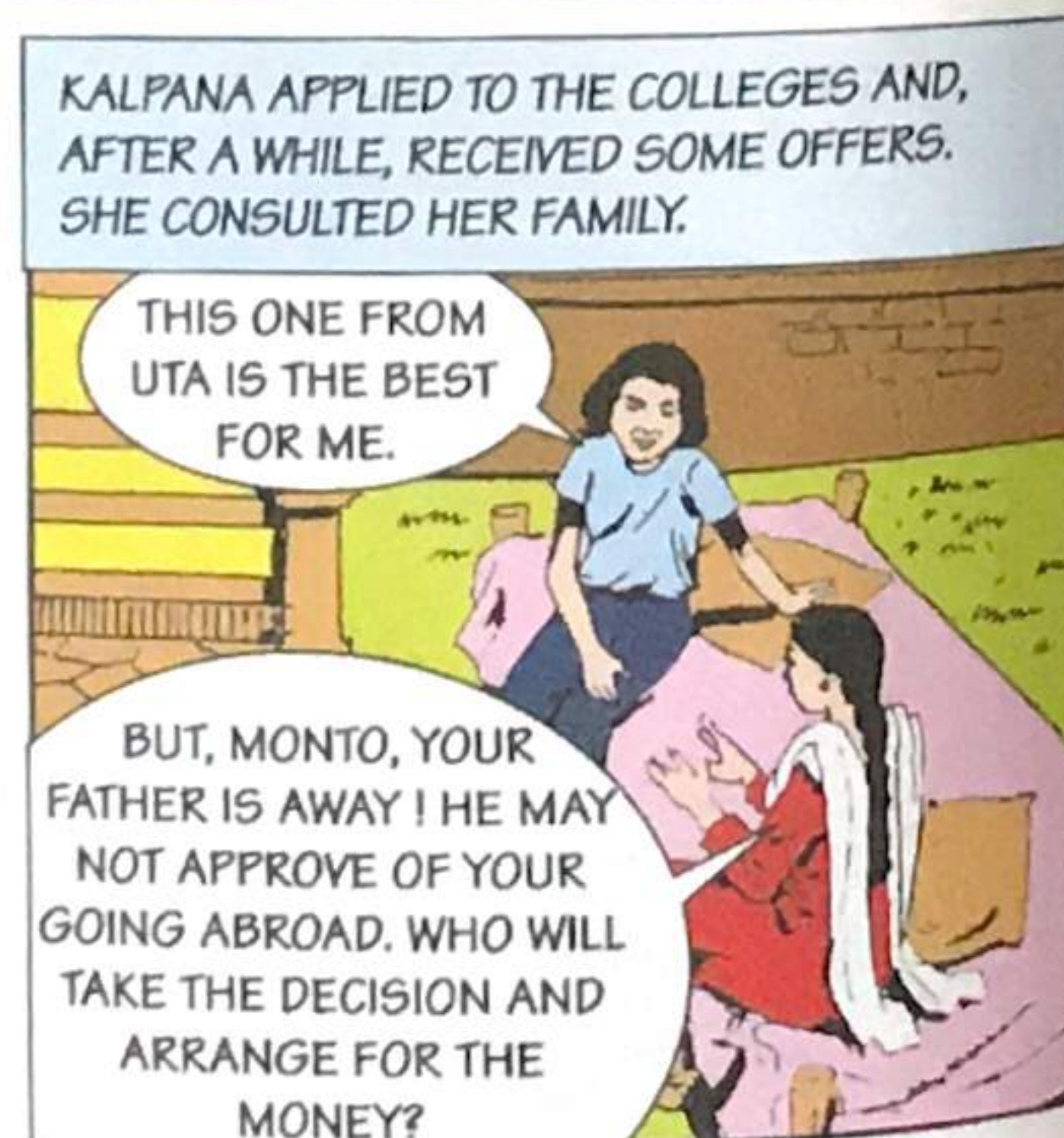
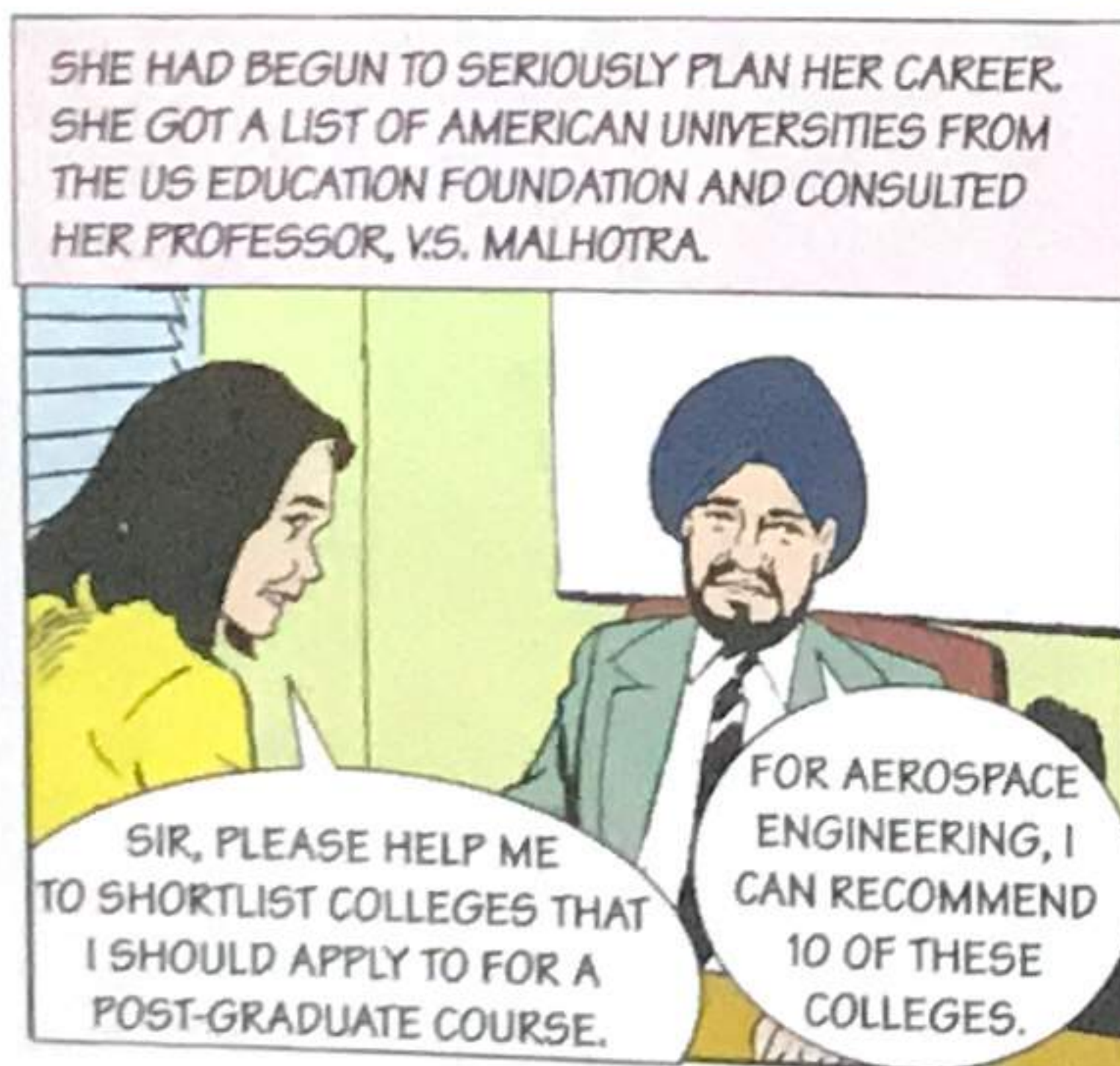
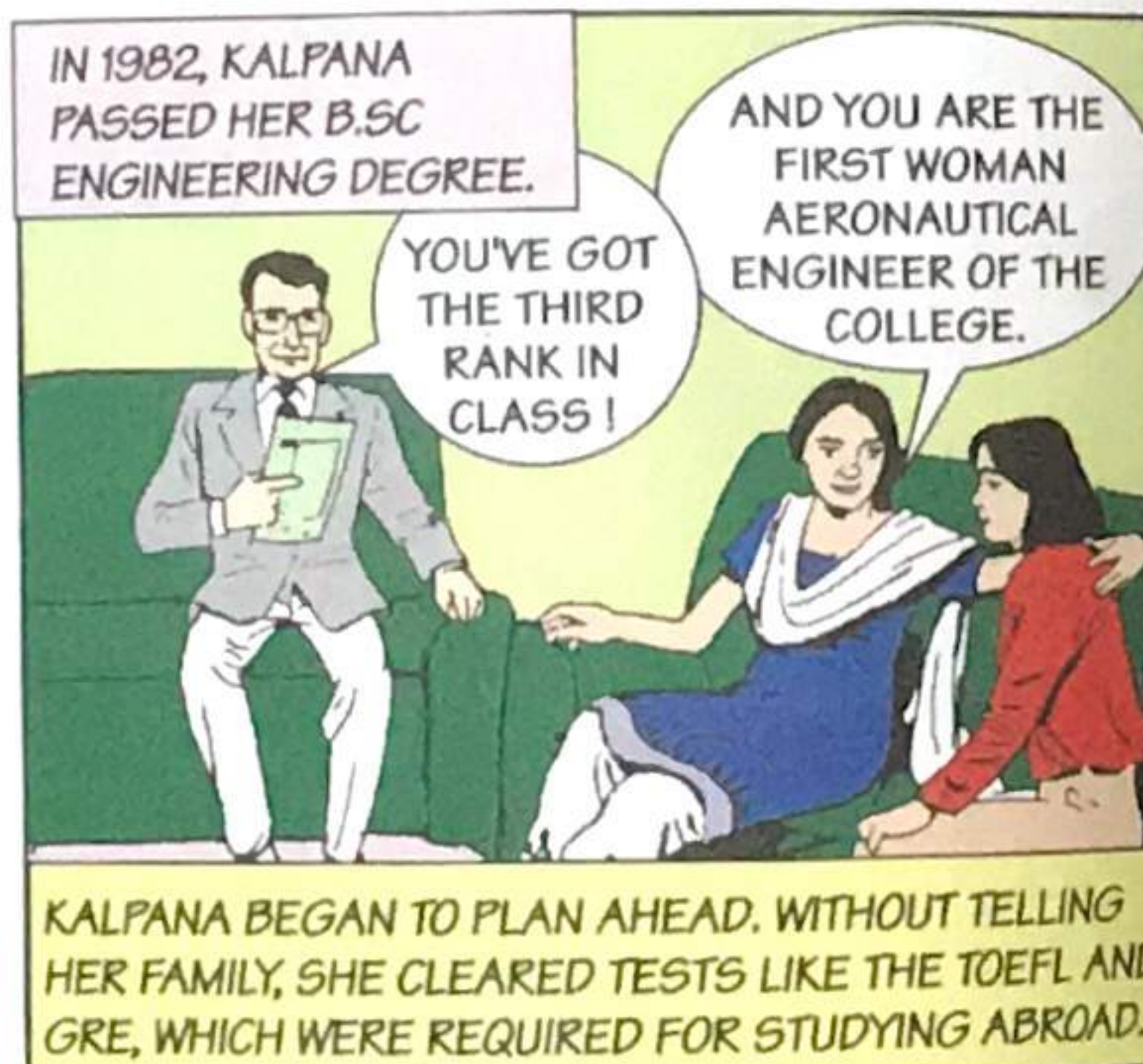
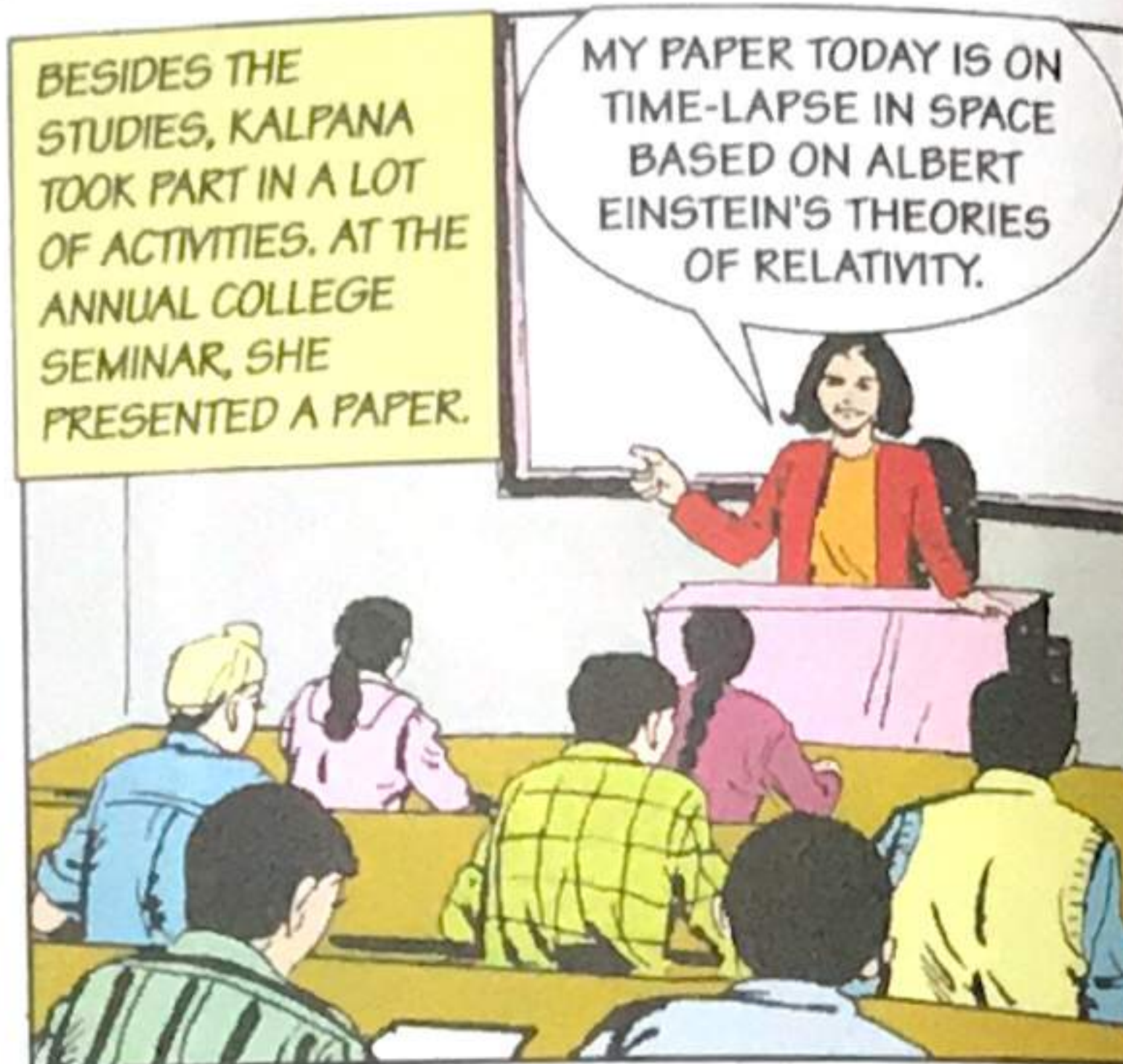
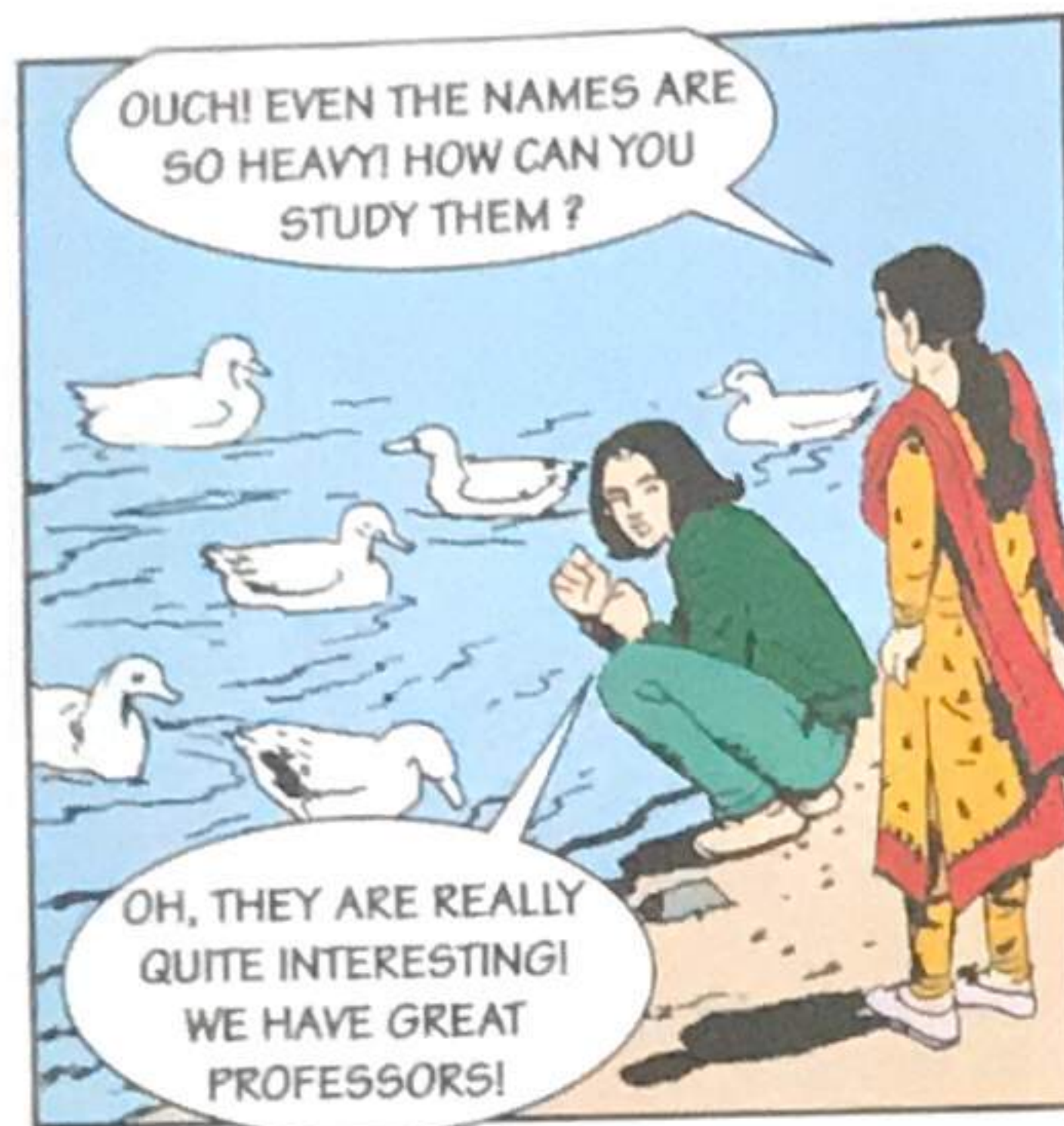


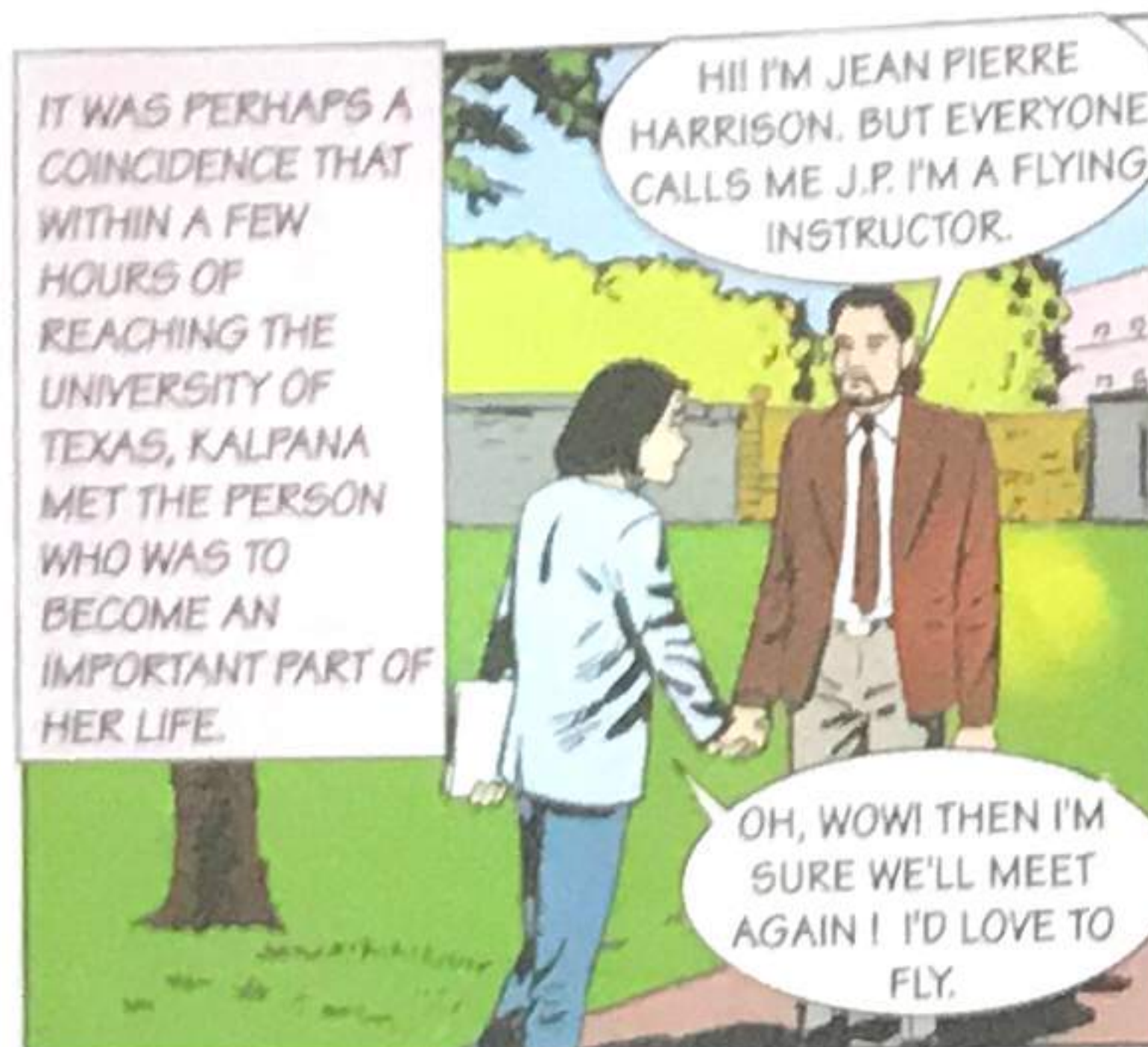
KALPANA VISITED HOME AS OFTEN AS SHE COULD.



SHE FOUND TIME TO MEET HER OLD FRIENDS TOO.







HII I'M JEAN PIERRE HARRISON. BUT EVERYONE CALLS ME J.P. I'M A FLYING INSTRUCTOR.

OH, WOW! THEN I'M SURE WE'LL MEET AGAIN! I'D LOVE TO FLY.



IN SEPTEMBER 1982, HER CLASSES STARTED.

A STRANGE CLASS, STRANGE TOWN, STRANGE COUNTRY... BUT THIS IS WHAT I WANT TO DO MOST OF ALL!

UNDER THE GUIDANCE OF HER AERODYNAMICS PROFESSOR, KALPANA ENTHUSIASTICALLY PURSUED HER ACADEMIC DREAM.



A QUIET STUDENT, BUT VERY BRIGHT AND DETERMINED.

MEANWHILE, HER FRIENDSHIP WITH J.P. WAS GROWING AND THEY FOUND MANY COMMON INTERESTS LIKE HIKING, SCUBA DIVING, MUSIC AND BOOKS.



HII MEET MY FRIEND, KALPANA CHAWLA.

THAT'LL BE TOUGH TO REMEMBER! I'LL CALL YOU K.C.

WITHIN A YEAR, KALPANA REALISED SHE HAD FOUND HER SOUL MATE. J.P. AND K.C., AS SHE WAS CALLED NOW, GOT MARRIED IN A QUIET CEREMONY ON DECEMBER 2, 1983.



KALPANA FINISHED HER MASTERS DEGREE IN 1984. SHE NOW WANTED TO STUDY FOR HER DOCTORATE.



THE BEST RESEARCH PROGRAMME FOR ME WOULD BE AT THE UNIVERSITY OF COLORADO.

FINE! LET'S MOVE TO COLORADO THEN.



J.P. WAS VERY SUPPORTIVE OF KALPANA'S ACADEMIC AMBITIONS AND SO THEY MOVED TO BOULDER IN COLORADO WHERE SHE STUDIED FOR HER PHD.



HE ALSO SUPPORTED HER PASSION FOR FLYING BY GIVING HER A FEW LESSONS.

J.P. WAS A FREELANCE FLYING INSTRUCTOR WHO HAD WORKED WITH NASA AND ALSO WRITTEN MANY FLYING MANUALS.

KALPANA OBTAINED HER PILOT'S LICENSE IN 1987. IT WAS BY CHANCE THAT HER MOTHER WAS VISITING HER THEN.



COME! I'LL TAKE YOU ON MY FIRST FLIGHT AS A LICENSED PILOT.

MY LITTLE GIRL IS REALLY AMAZING. SHE LOVES TO SHARE HER JOYS.

SHE SAT SPELLBOUND AS THE FIRST PASSENGER THAT KALPANA FLEW IN HER SMALL PLANE.

KALPANA'S THESIS WAS ON COMPUTATIONAL FLUID DYNAMICS. HER RESEARCH GUIDE, DON WILSON, WAS A GOOD INFLUENCE ON HER.



SEE, THERE IS A WORKSHOP ON ROCKET PROGRAMME IN NASA. ARE YOU INTERESTED?

I WOULD LOVE TO ATTEND IT!

THE NATIONAL AERONAUTICS SPACE ADMINISTRATION (NASA) IS THE LARGEST CENTRE FOR SPACE RESEARCH IN THE WORLD AND IS RESPONSIBLE FOR THE AMERICAN SPACE PROGRAMME. ON JANUARY 28, 1986 -

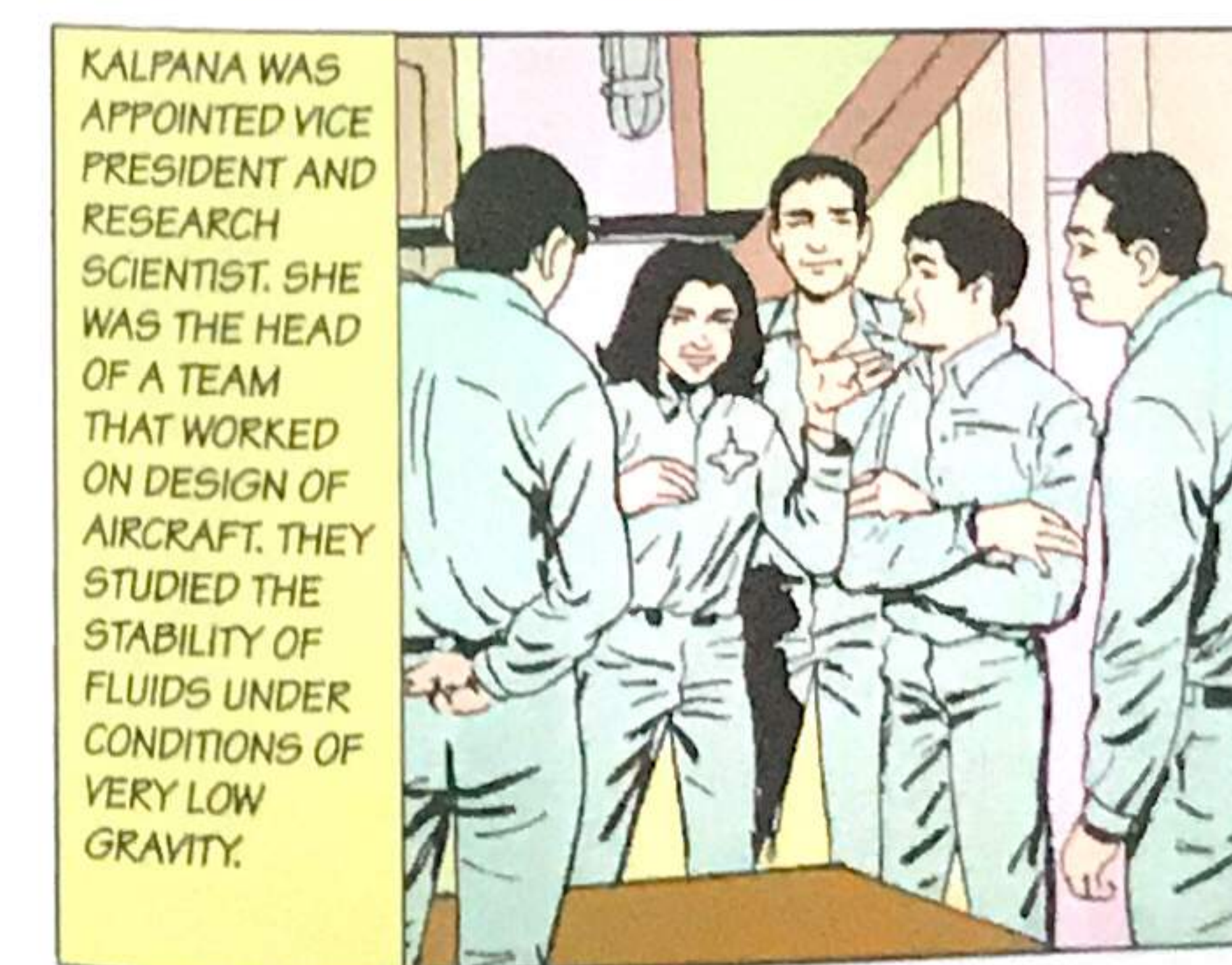
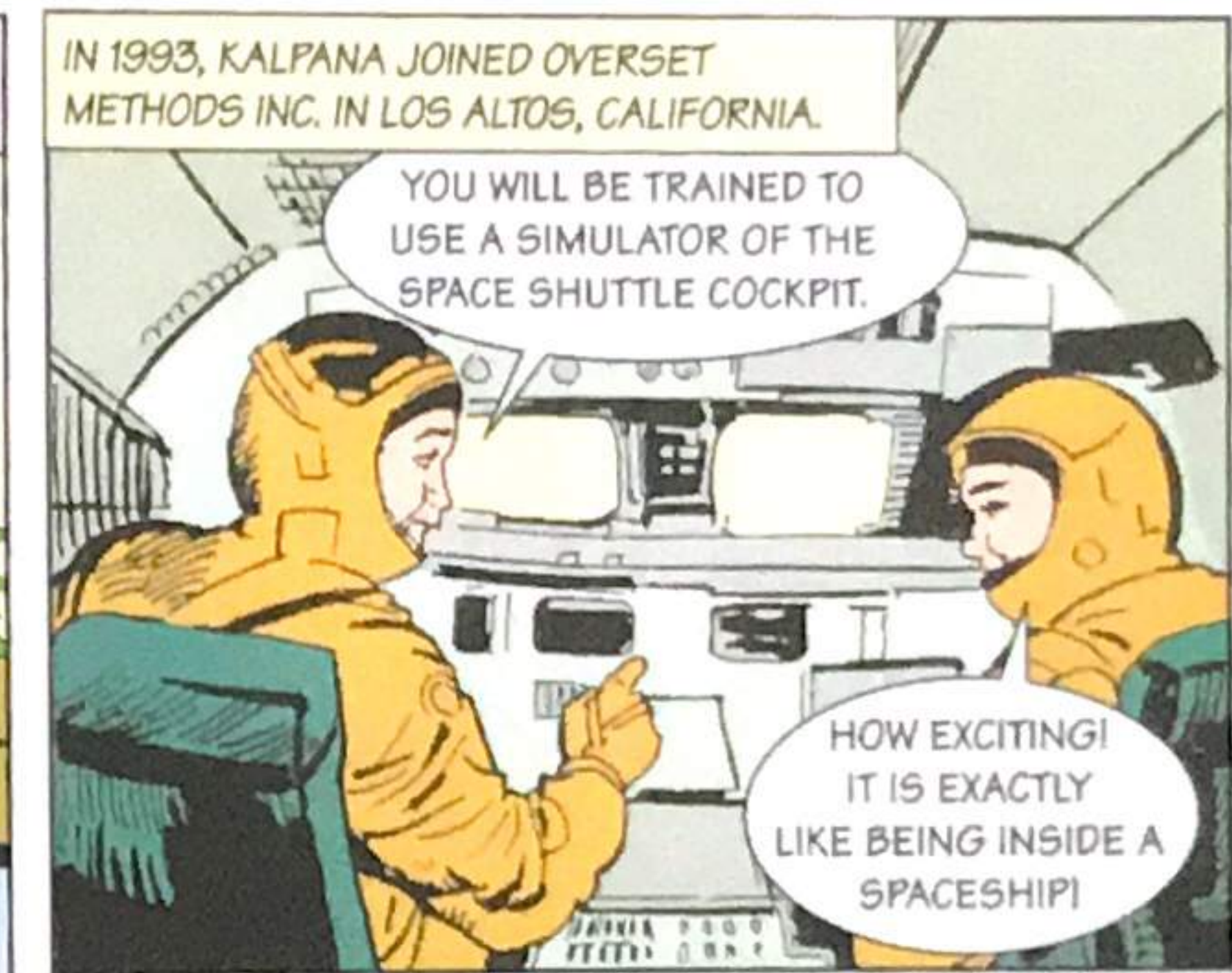
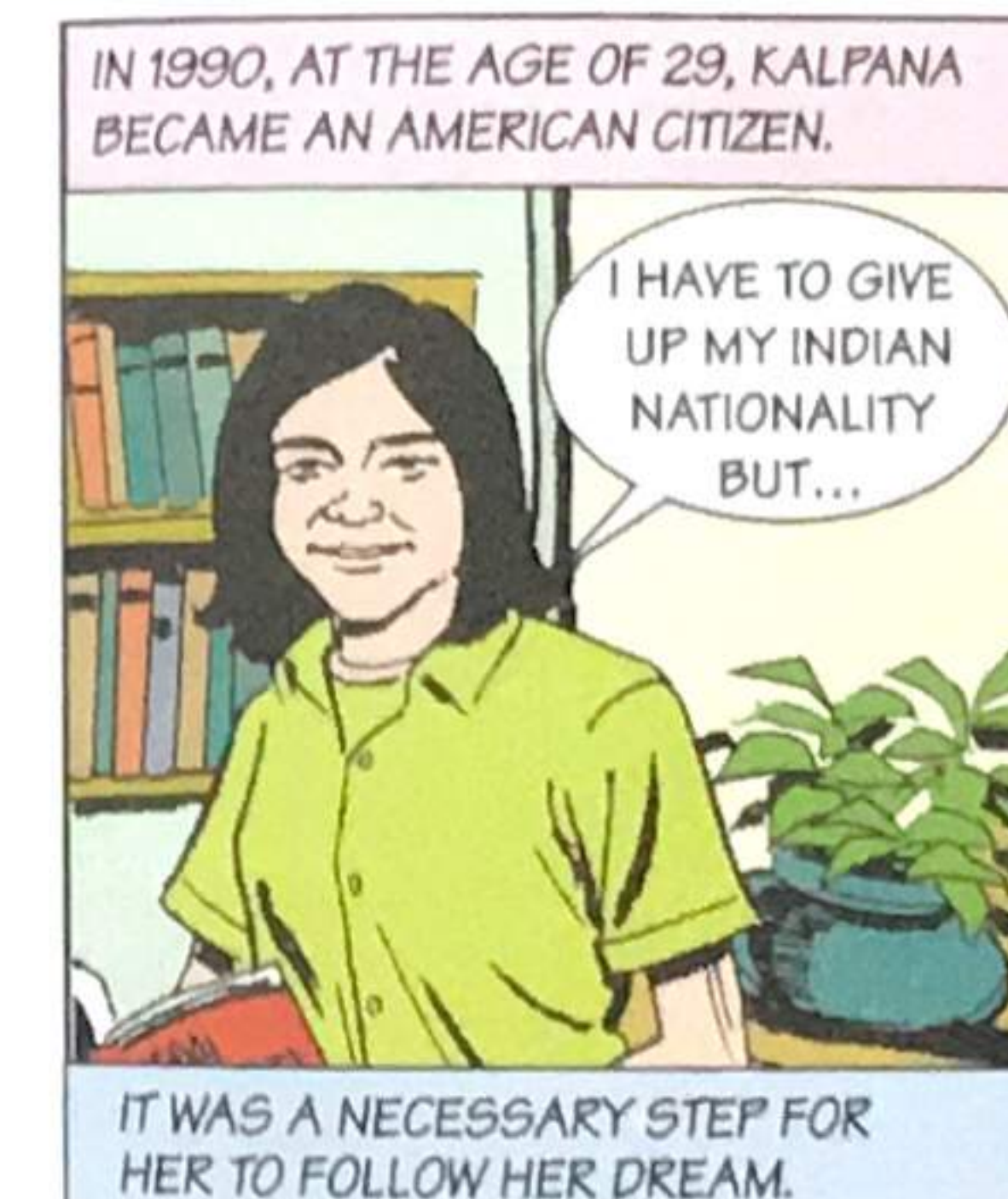
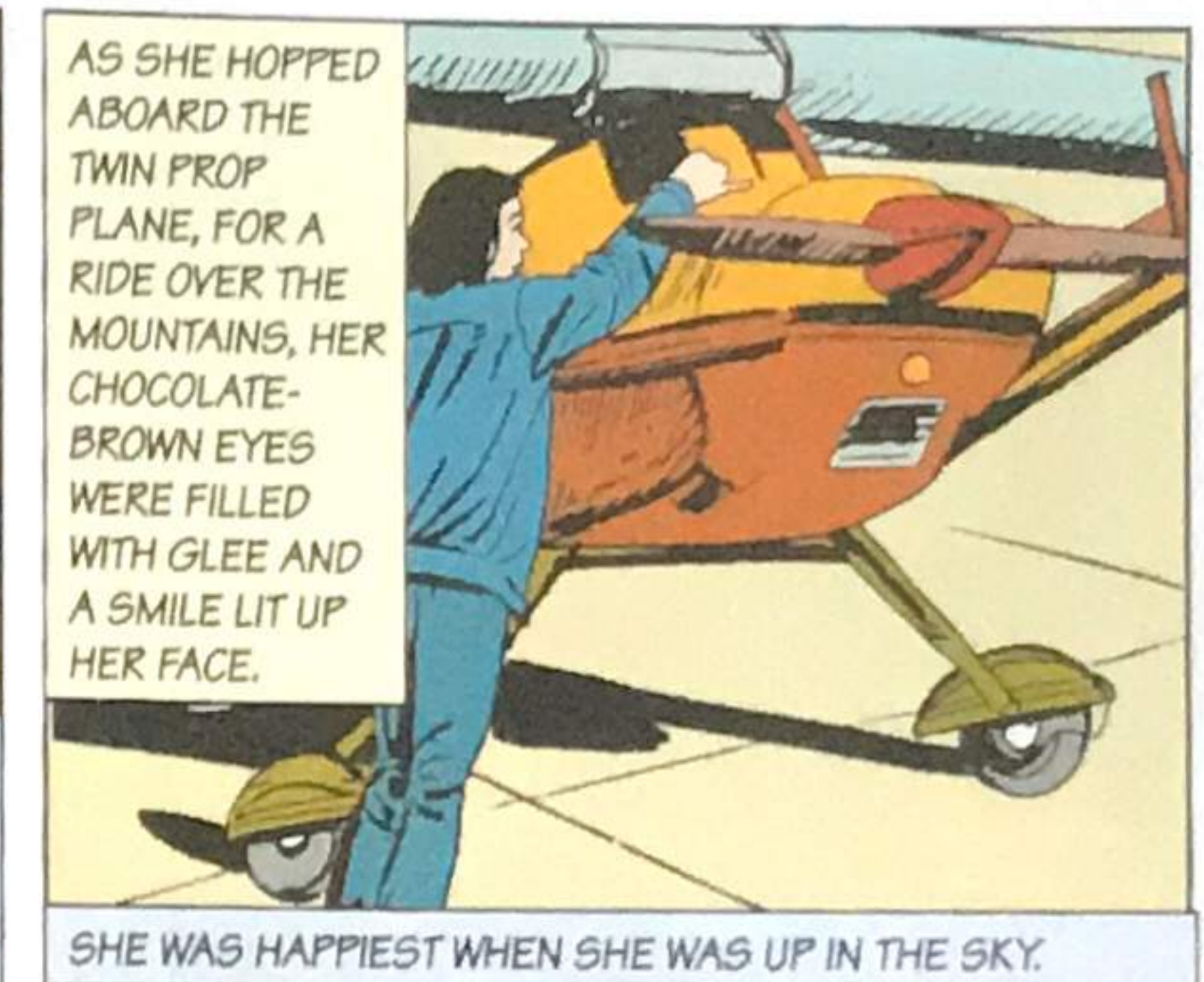
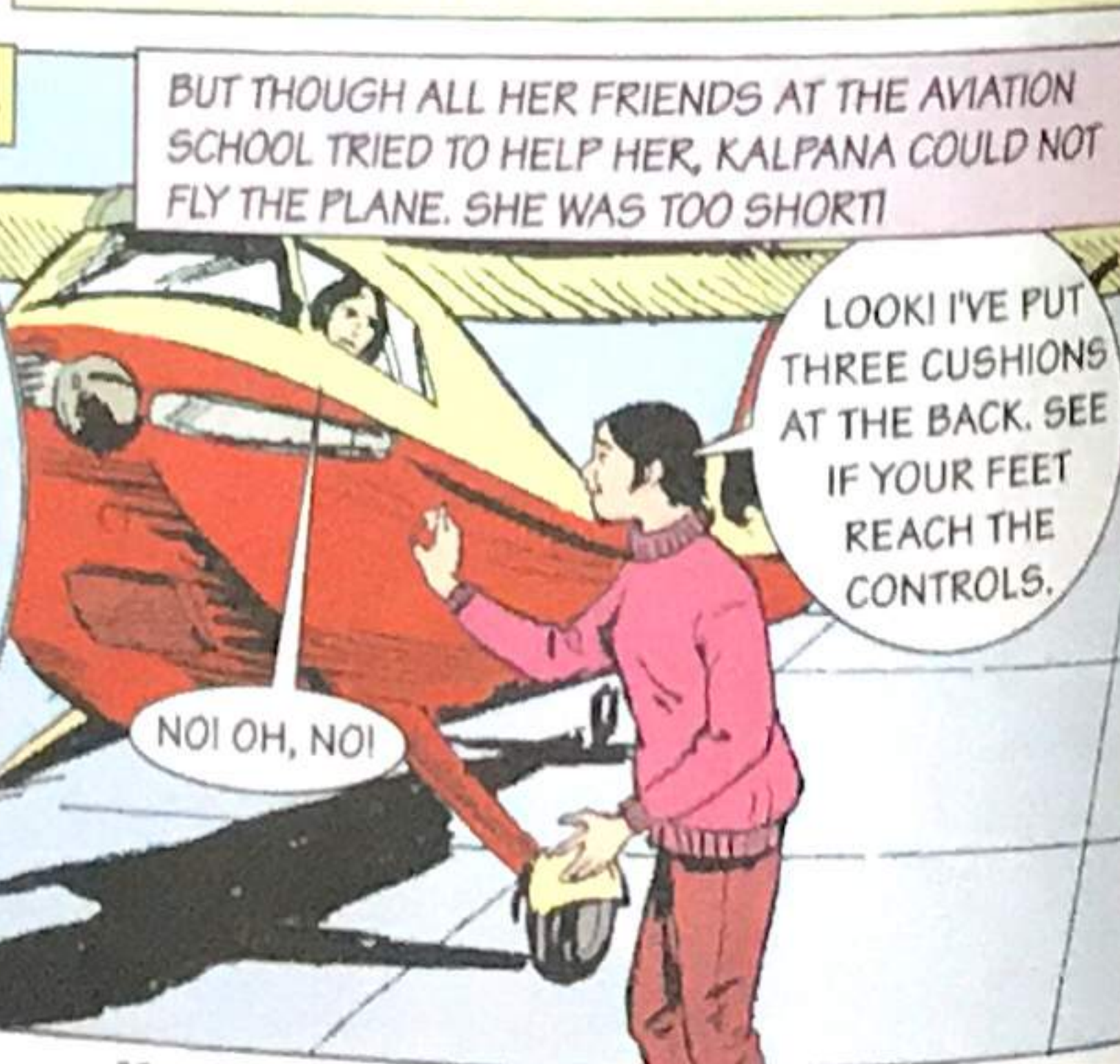
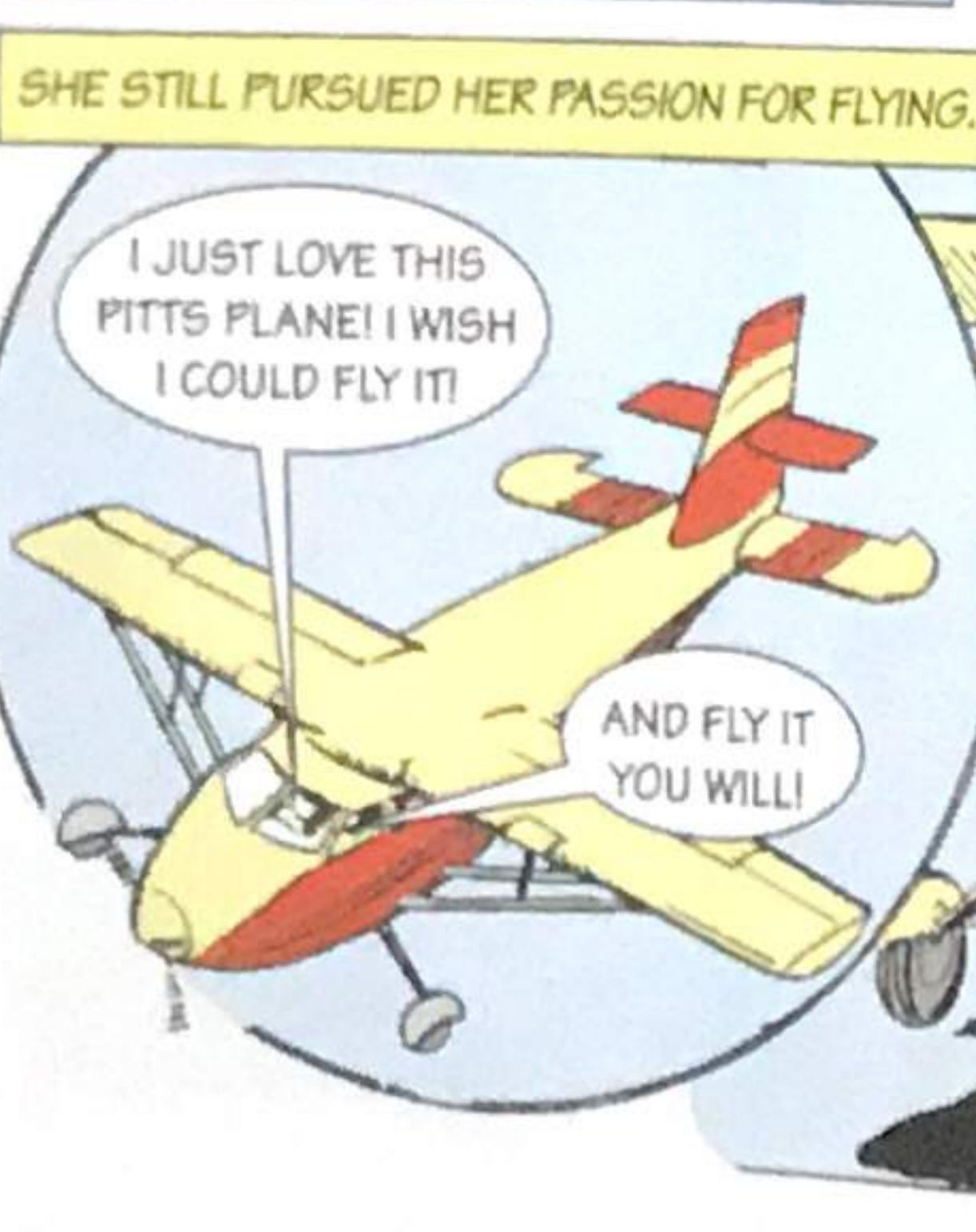
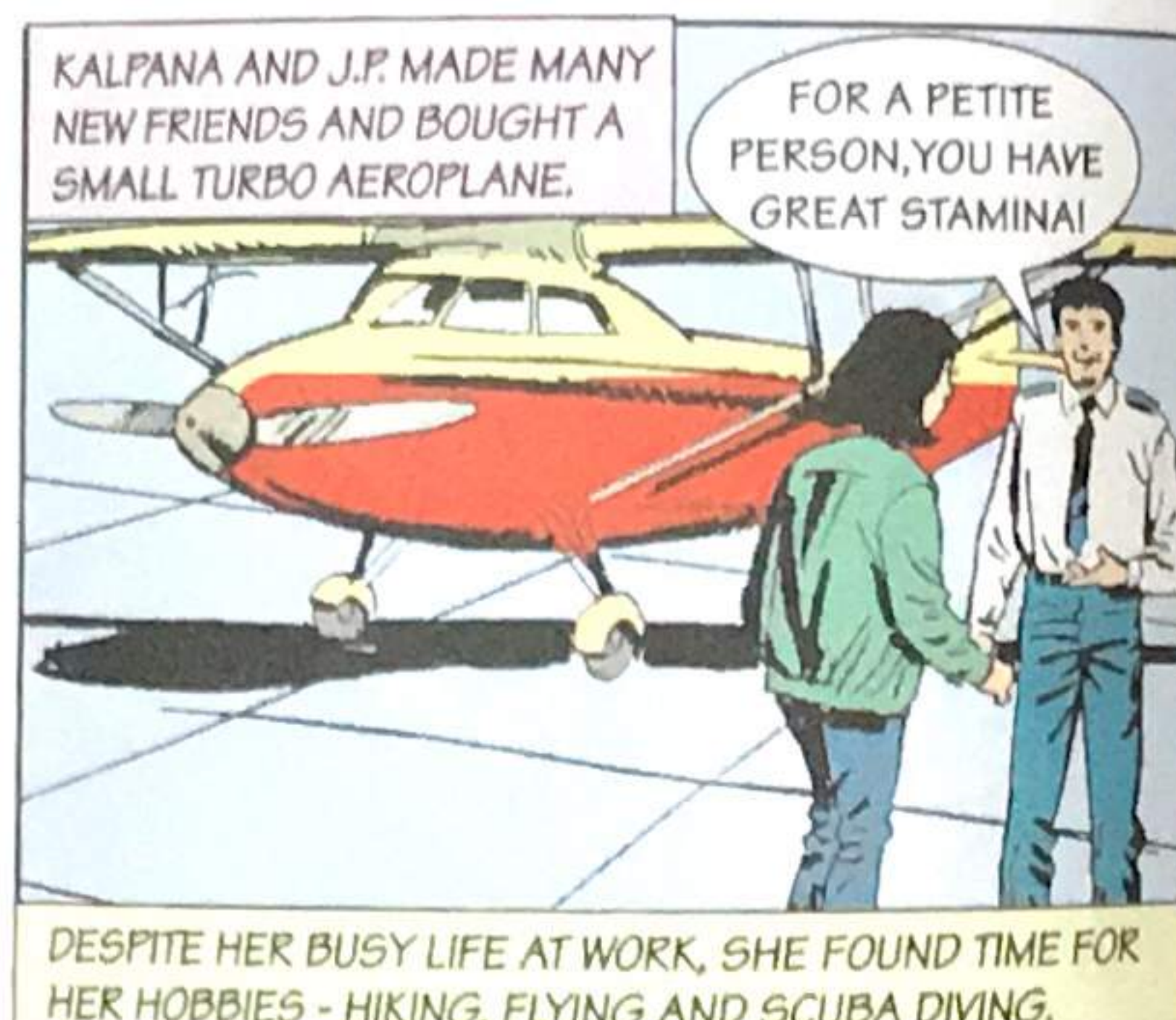
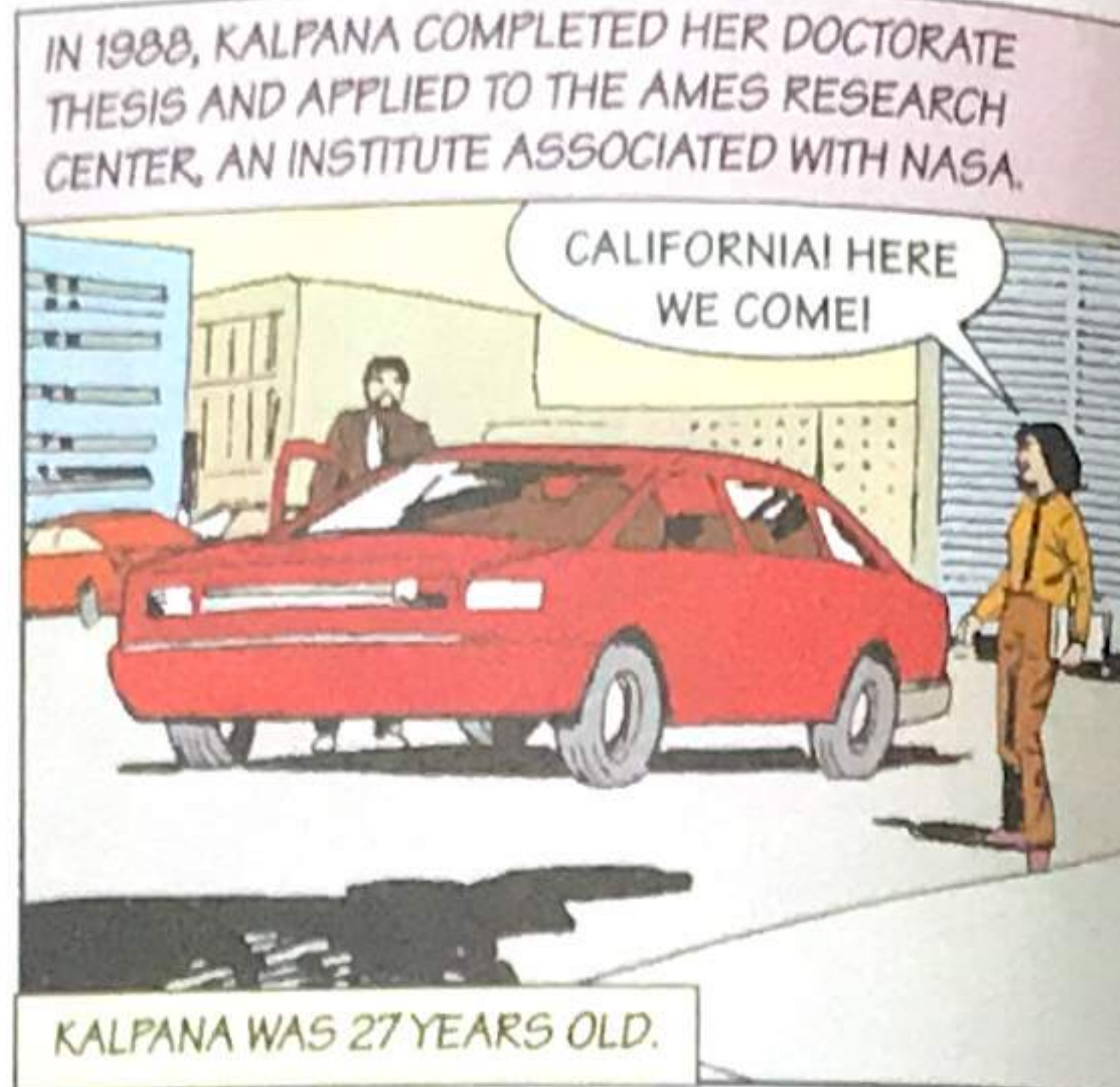


THE AMERICAN SPACE SHUTTLE CHALLENGER HAS EXPLODED, KILLING ALL SEVEN ASTRONAUTS ON BOARD.

IT WAS A SAD MOMENT FOR SPACE SCIENCE. BUT SUCH EVENTS DID NOT DETER KALPANA'S DREAMS OF REACHING FOR THE SKIES.



IT REQUIRES STRONG WILL-POWER TO BE AN ASTRONAUT!



HARRISON HAD BECOME THE CHIEF FLYING INSTRUCTOR AT THE WEST VALLEY FLYING CLUB AT PALO ALTO AIRPORT.



BOTH OF THEM LED BUSY LIVES.

YET THEY FOUND TIME TO RELAX AND ENJOY EACH OTHER'S COMPANY WITH GOOD MUSIC AND GOOD FRIENDS.



KALPANA FOUND TIME TO LEARN THE INDIAN CLASSICAL DANCE, BHARAT NATYAM, AT THE ABHINAV DANCE ACADEMY.

KALPANA WAS ATTACHED TO HER INDIAN ROOTS AND EVEN INTRODUCED HARRISON TO INDIAN COOKING.



NOW PUT A PINCH OF THE YELLOW POWDER, THE RED POWDER AND BROWN POWDER.

WOW! COLOURFUL COOKING, I MUST SAY!

KALPANA LOVED TO GO BIKING, ESPECIALLY ON FULL MOON NIGHT.



THERE IS SOMETHING MAGICAL ABOUT THE MOONLIGHT!

IN PALO ALTO, THERE WERE MANY OPPORTUNITIES FOR SUCH OUTDOOR ACTIVITIES AND HOBBIES.

KALPANA WAS NOT SELECTED AS AN ASTRONAUT WHEN SHE APPLIED THE FIRST TIME TO NASA. SHE TRIED AGAIN, PASSED THE WRITTEN TEST, WAS CALLED FOR AN INTERVIEW AND RECEIVED THE CALL LETTER FROM NASA IN DECEMBER 1994. SHE WAS OVERJOYED.

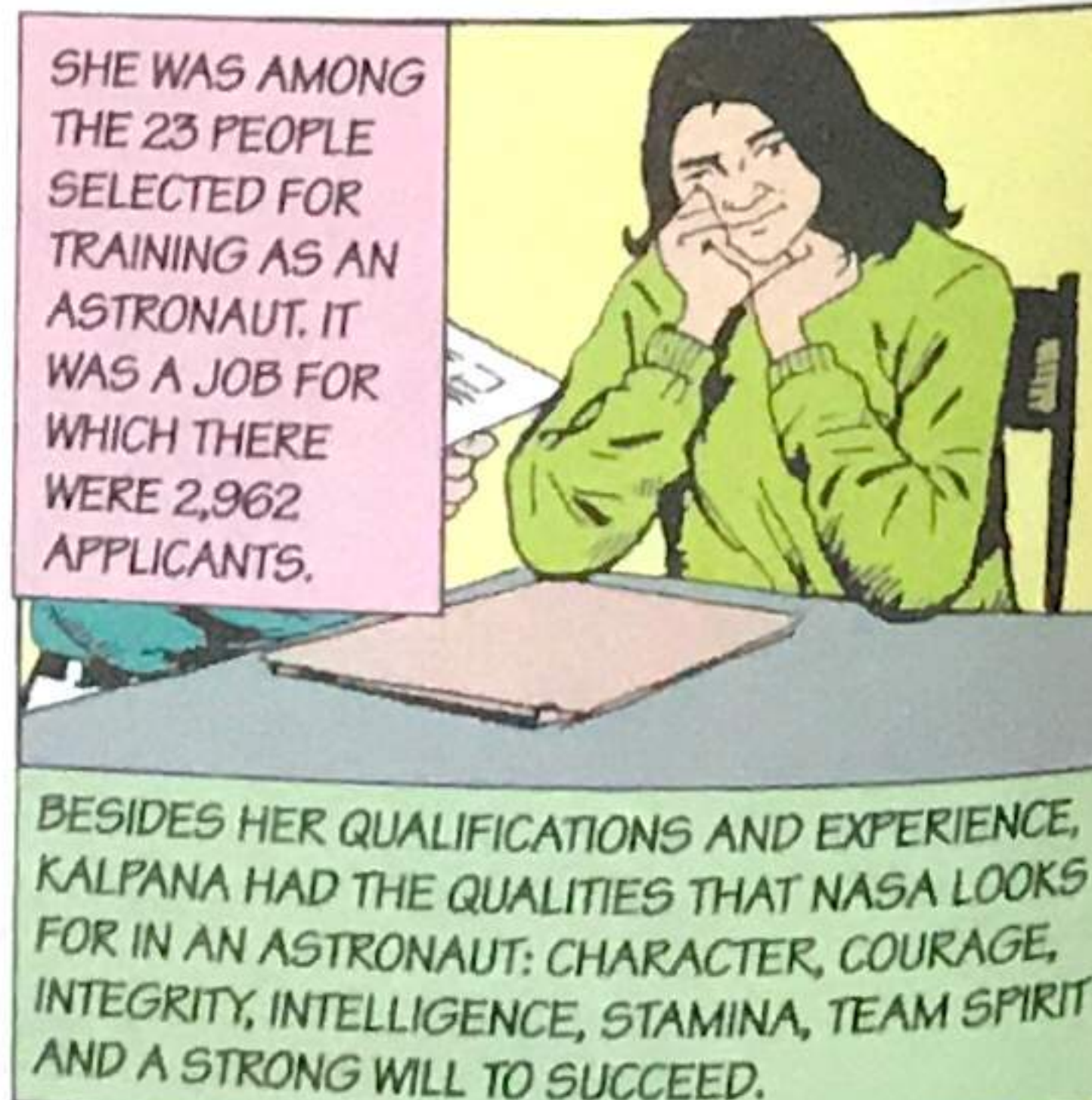


I'M IN! I'M IN!

YOU ARE IN WHAT?

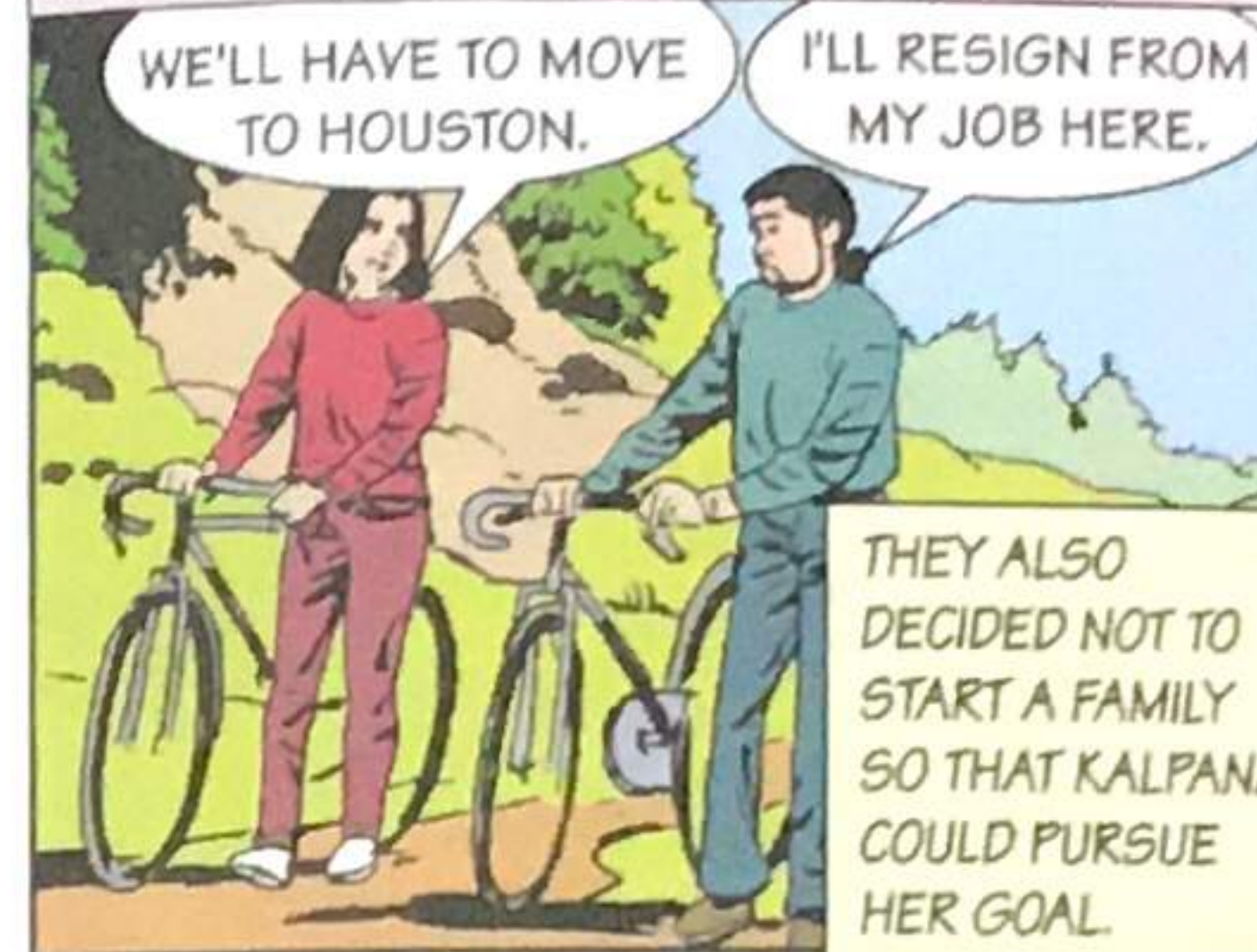
IN NASA, AS AN ASTRONAUT!

SHE WAS AMONG THE 23 PEOPLE SELECTED FOR TRAINING AS AN ASTRONAUT. IT WAS A JOB FOR WHICH THERE WERE 2,962 APPLICANTS.



BESIDES HER QUALIFICATIONS AND EXPERIENCE, KALPANA HAD THE QUALITIES THAT NASA LOOKS FOR IN AN ASTRONAUT: CHARACTER, COURAGE, INTEGRITY, INTELLIGENCE, STAMINA, TEAM SPIRIT AND A STRONG WILL TO SUCCEED.

SHE HAD TO GO TO THE JOHNSON SPACE CENTER IN HOUSTON FOR A YEAR OF TRAINING AND EVALUATION. IT WAS TIME TO MAKE ONE MORE MAJOR DECISION.



WE'LL HAVE TO MOVE TO HOUSTON.

I'LL RESIGN FROM MY JOB HERE.

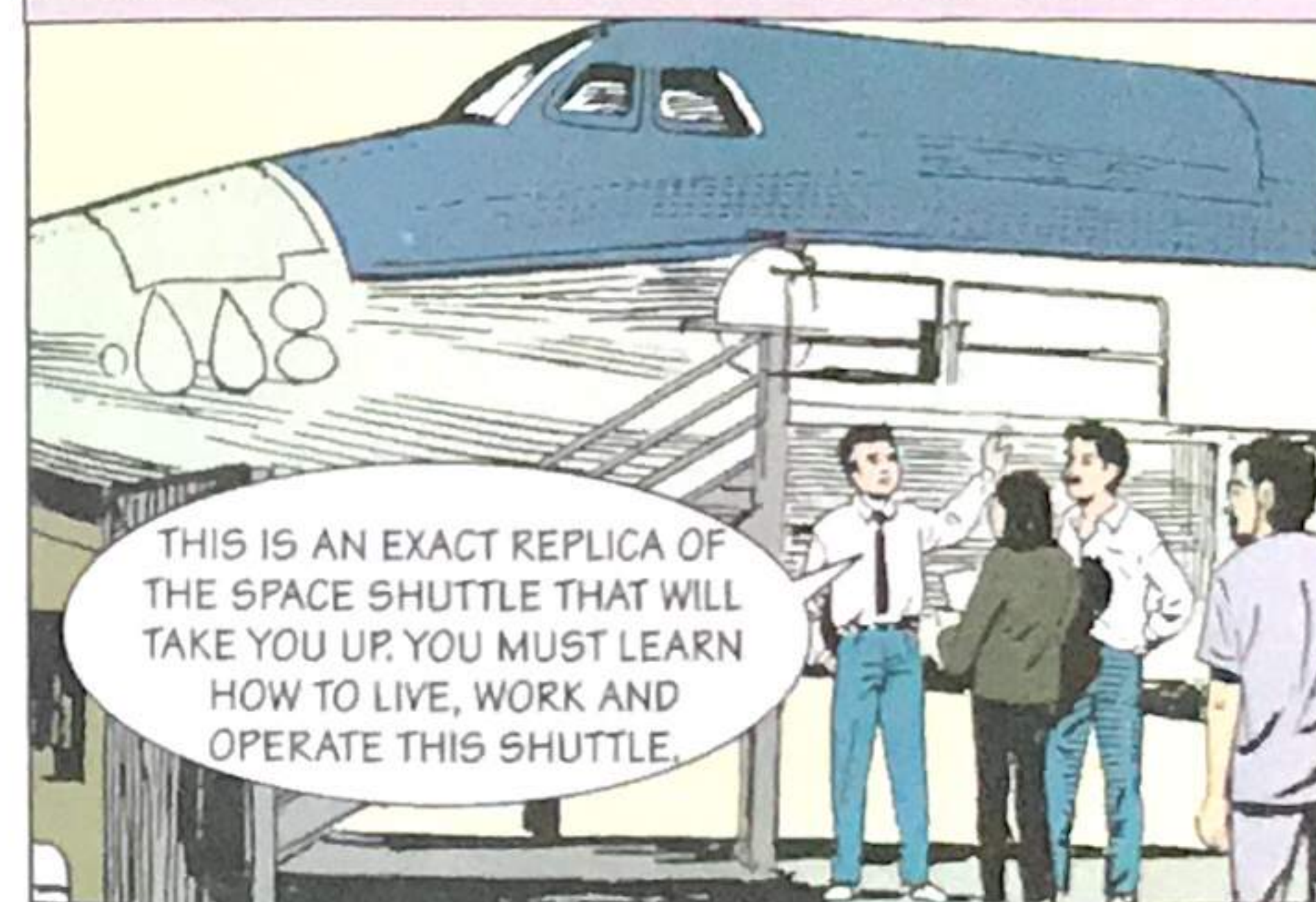
THEY ALSO DECIDED NOT TO START A FAMILY SO THAT KALPANA COULD PURSUE HER GOAL.

IN MARCH 1995, KALPANA AND HER TEAMMATES JOINED THE NASA ASTRONAUT TRAINING CAMP.



NOW YOU ARE ASCANS - ASTRONAUT CANDIDATES. YOU WILL BE TRAINED TO GO UP IN SPACE AND LIVE IN A SPACESHIP.

A PART OF THE TRAINING TOOK PLACE INSIDE MOCK SHUTTLES.



THIS IS AN EXACT REPLICA OF THE SPACE SHUTTLE THAT WILL TAKE YOU UP. YOU MUST LEARN HOW TO LIVE, WORK AND OPERATE THIS SHUTTLE.



IT WAS A TOUGH TRAINING PROGRAMME.

SO MANY CONTROLS, SO MANY BUTTONS, SO MANY SYSTEMS!

TO TEST THEIR PHYSICAL ENDURANCE, STAMINA AND SURVIVAL SKILLS DURING CRISIS, THEY WERE DROPPED OVER MOUNTAINS AND JUNGLES WITHOUT FOOD AND WATER AND HAD TO FIND THEIR WAY BACK ON THEIR OWN.

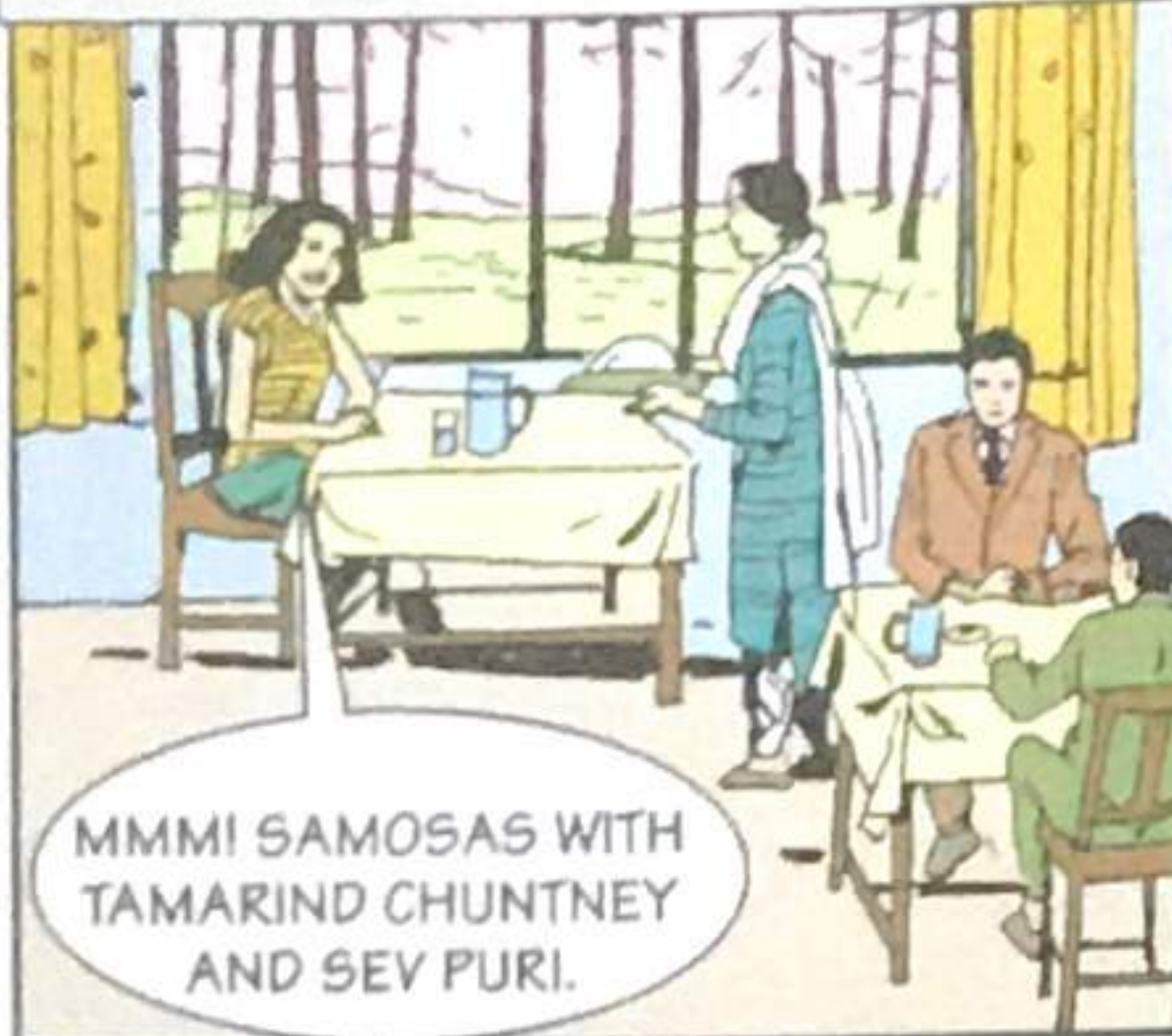


FOR FOURTEEN MONTHS, KALPANA AND HER FELLOW TEAMMATES LEARNT ABOUT LIVING IN A GRAVITY-LESS ENVIRONMENT.



IN THIS HUGE WATER TANK, YOU'LL LEARN HOW TO PERFORM EVERYDAY FUNCTIONS UNDER ZERO GRAVITY.

WHEN SHE HAD TIME FROM HER RIGOROUS TRAINING, KALPANA LOVED TO RELAX AT HER FAVOURITE EATERY AT CLEAR LAKE NEAR NASA COMPLEX IN HOUSTON.



MMMI SAMOSAS WITH TAMARIND CHUNTNEY AND SEV PURI.

KALPANA KEPT IN CLOSE TOUCH WITH HER FAMILY, FRIENDS AND OLD SCHOOL TEACHERS IN SPITE OF HER HECTIC LIFESTYLE. HER FAMILY OFTEN VISITED HER HOME IN TEXAS.



COME SIT WITH US, DIDI.

OK. YOUR TURN TO DEAL NOW!

KALPANA QUALIFIED AS A NASA ASTRONAUT, BUT NOT ALL ASTRONAUTS GET A CHANCE TO JOURNEY INTO SPACE. IN 1996, SHE GOT A CALL FROM ASTRONAUT DAVID LEESTMA.



KALPANA CHAWLA, WOULD YOU BE INTERESTED IN WORKING WITH ME?

WOW! THIS MEANS I HAVE BEEN SELECTED FOR A SPACE MISSION!

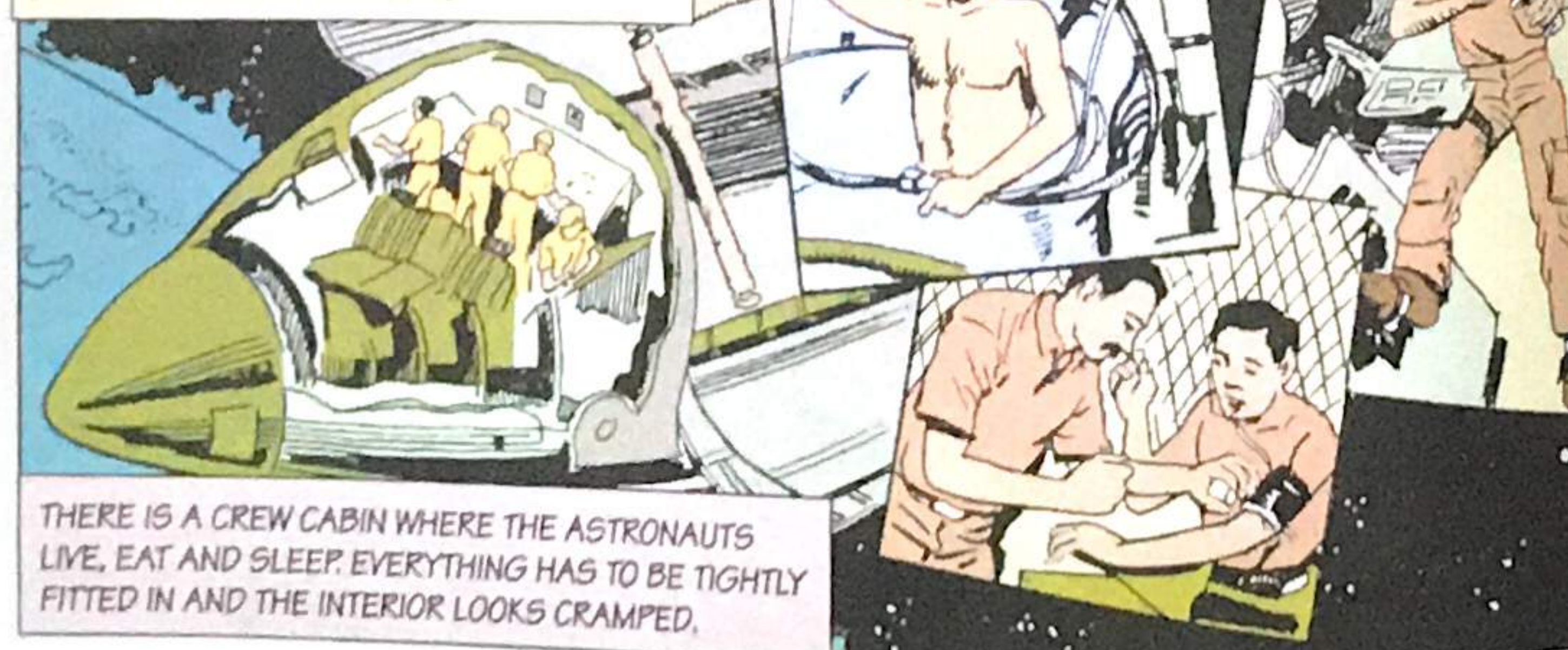
SHE WAS SELECTED FOR THE SPACE SHUTTLE MISSION, SPACE TRANSPORTATION SYSTEM-87 OR STS-87, 'COLUMBIA' WAS THE SHUTTLE CHOSEN FOR IT.



KALPANA CHAWLA, YOU WILL BE THE MISSION SPECIALIST AND PRIME ROBOTIC ARM OPERATOR.

THE MISSION SPECIALIST IS AN ASTRONAUT WITH A TECHNICAL BACKGROUND, WHO CO-ORDINATES THE VARIOUS ACTIVITIES OF THE SHUTTLE.

THE SPACE SHUTTLE IS LIKE A HUGE PLANE WITH A PAYLOAD BAY WHERE ALL EQUIPMENT, SATELLITES AND EXPERIMENT MATERIAL ARE KEPT. IN THIS AREA, THE ASTRONAUTS CONDUCT THEIR EXPERIMENTS.



THERE IS A CREW CABIN WHERE THE ASTRONAUTS LIVE, EAT AND SLEEP. EVERYTHING HAS TO BE TIGHTLY FITTED IN AND THE INTERIOR LOOKS CRAMPED.

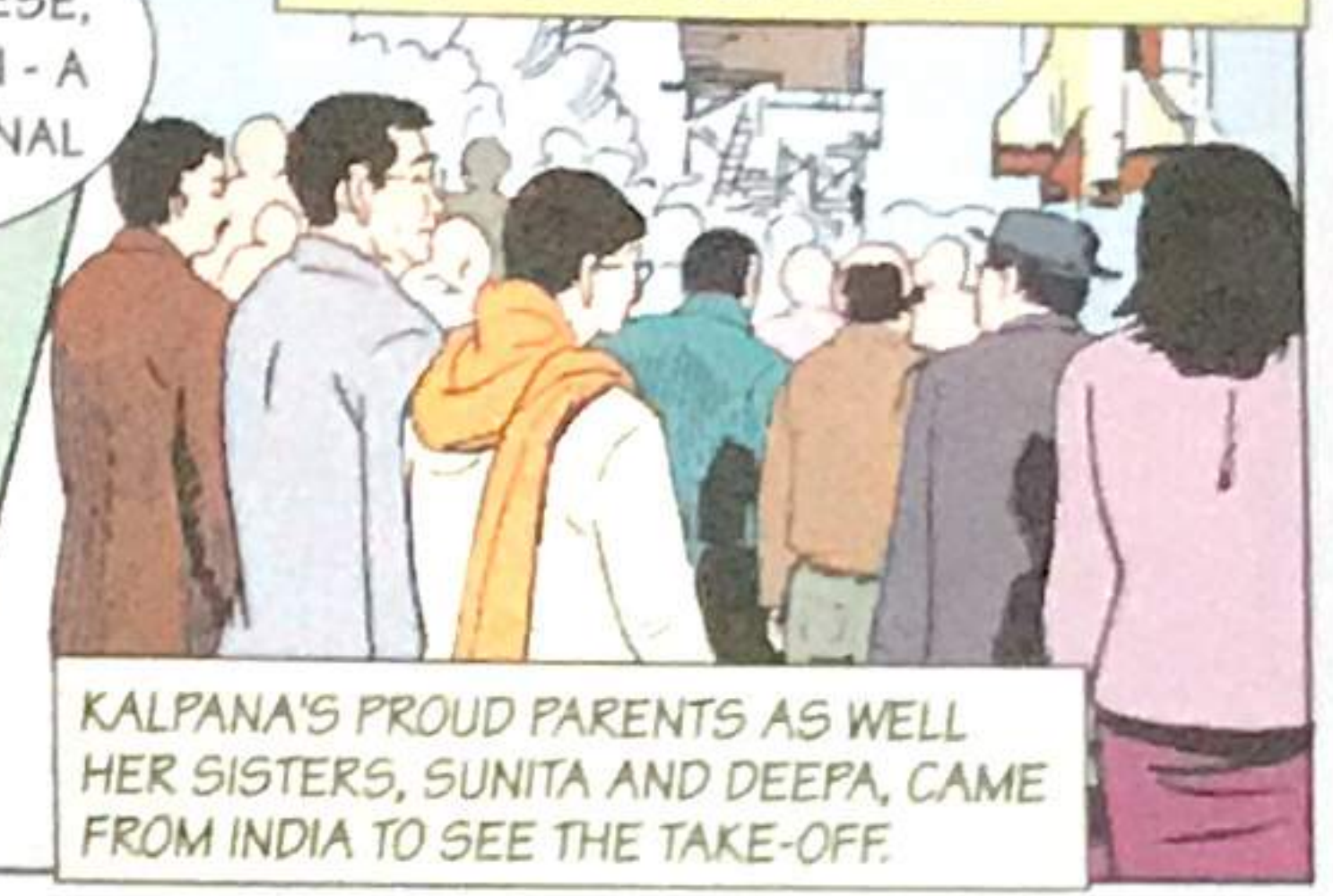
BESIDES KALPANA, THE CREW FOR STS-87 ALSO INCLUDED COMMANDER KEVIN KREGEL, MISSION SPECIALIST WINSTON SCOTT, TAKAO DOI, PILOT STEVEN LINDSEY AND PAYLOAD SPECIALIST LEONID KADENYUK.



AMERICAN, JAPANESE, UKRAINIAN, INDIAN - A TRULY INTERNATIONAL CREW!

KREGEL, LINDSEY AND SCOTT WERE AMERICAN; DOI WAS JAPANESE; KADENYUK, A UKRAINIAN; AND KALPANA OF INDIAN ORIGIN.

THE STS-87 WAS TO BE SHOT INTO SPACE ON OCTOBER 9, 1997, BUT THE DATE WAS LATER CHANGED TO NOVEMBER 17. CLAD IN THE HUGE ORANGE ASTRONAUT GEAR, KALPANA WAS READY.



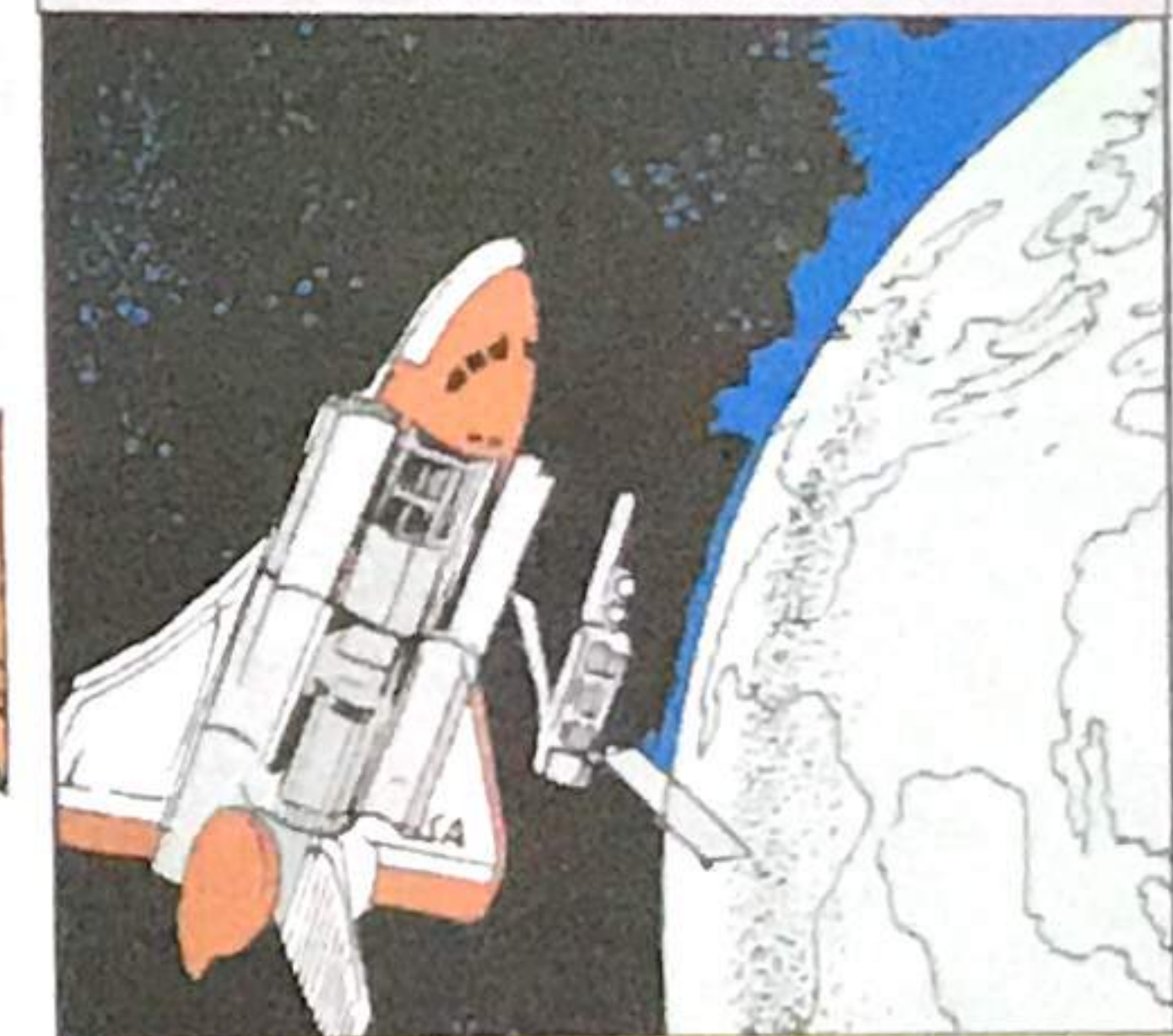
KALPANA'S PROUD PARENTS AS WELL HER SISTERS, SUNITA AND DEEPA, CAME FROM INDIA TO SEE THE TAKE-OFF.

THE ASTRONAUTS WERE STRAPPED INTO THEIR SEATS AND THE COUNTDOWN BEGAN. AS THE BOOSTER ROCKETS WERE FIRED, THE SHUTTLE LEAPED UP INTO THE SKY.



FOR TWO MINUTES, KALPANA FELT A CRUSHING PRESSURE ON HER CHEST.

THEN THE GRAVITY REDUCED AND HER ARMS FLOATED UP AS IF SHE WAS SWIMMING.



SOON THE SHUTTLE ORIENTED ITSELF TO ORBIT THE EARTH AT AN ALTITUDE OF 185-650 KM AT A SPEED OF 28,000 KM/HOUR.

KALPANA AND HER TEAM COULD NOW DISCARD THEIR HEAVY SUITS AND WEAR COMFORTABLE CLOTHES FOR THEIR WORK.



ALL WORK INSIDE A SPACECRAFT IS TOUGH. WALKING, EATING AND WEARING CLOTHES IS DONE IN ZERO GRAVITY.

THERE WAS NO DAY OR NIGHT, AS THE SUN WAS ALWAYS VISIBLE, BUT THE CREW HAD EIGHT HOURS SLEEP AND EVERY PART OF THEIR WORKING TIME WAS PLANNED FOR ACTIVITY.



EVEN ON BOARD, KALPANA WAS A STRICT VEGETARIAN. SHE ALWAYS ATE HER MEALS LOOKING OUT OF THE WINDOW, ENJOYING THE VIEW. ENGROSSSED BY THE SIGHTS OF SPACE, KALPANA WOULD OFTEN MISS HER MOUTH.



SHE HAD A WIDE CHOICE OF FOOD, INCLUDING PASTA, RICE PILAF, TORTILLAS, FRUITS AND MILK SHAKES.

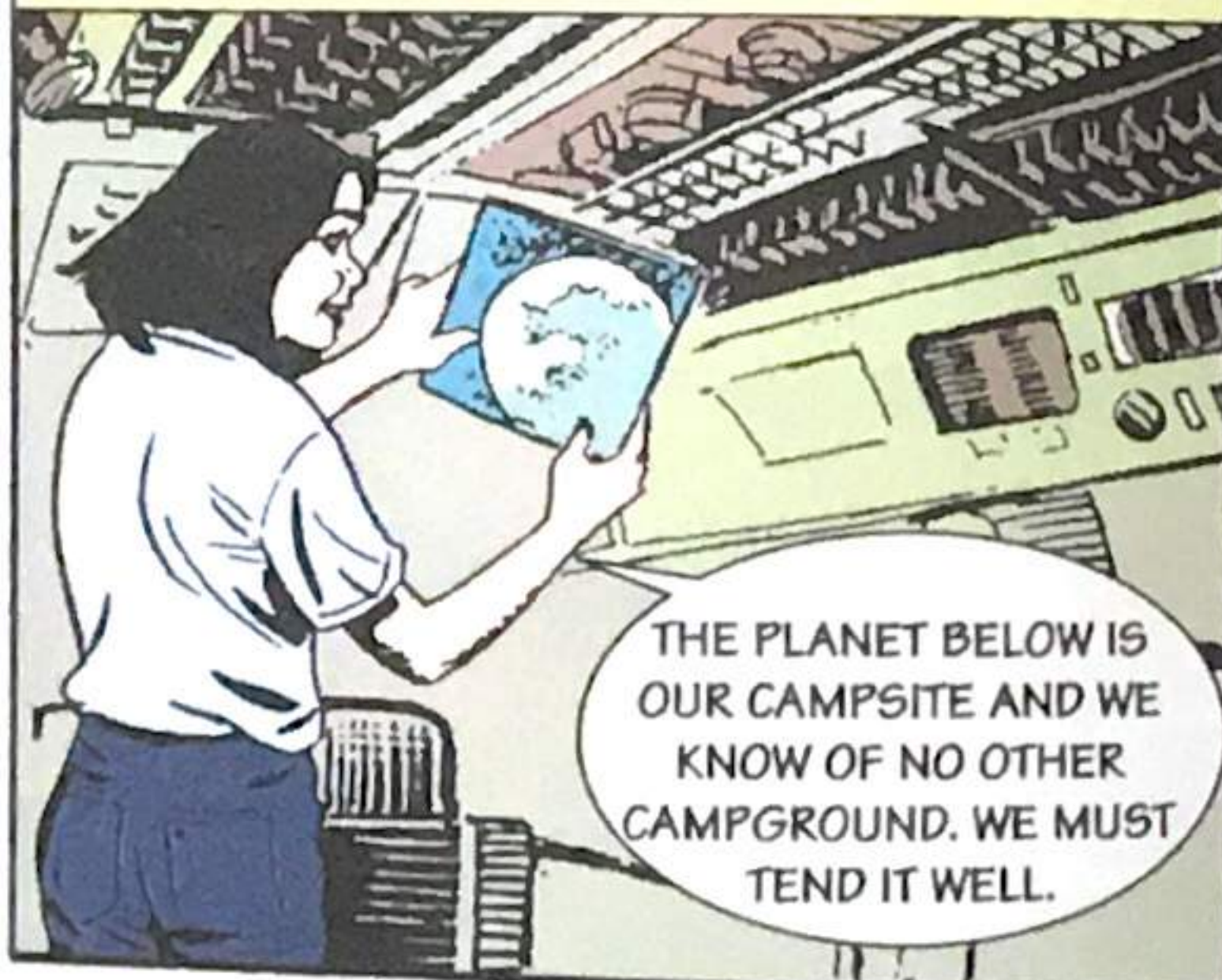
WHILE THEY CONDUCTED EXPERIMENTS AND MANOEUVRED THE SPACECRAFT, THE CREW ALSO GOT TIME TO TALK TO THEIR FAMILIES, SEND E-MAILS, LISTEN TO THEIR FAVOURITE MUSIC AND HOLD VIDEO CONFERENCES WITH MEDIA ON EARTH.



SEVEN HOURS AFTER THE LAUNCH, COLUMBIA CROSSED OVER THE INDIAN SUB-CONTINENT. KALPANA FELT EXCITED WHEN SHE PEEKED OUT OF THE WINDOW.



SHE TOOK MANY PHOTOGRAPHS OF THE EARTH AND BECAME AWARE OF THE FRAGILITY OF THE PLANET.

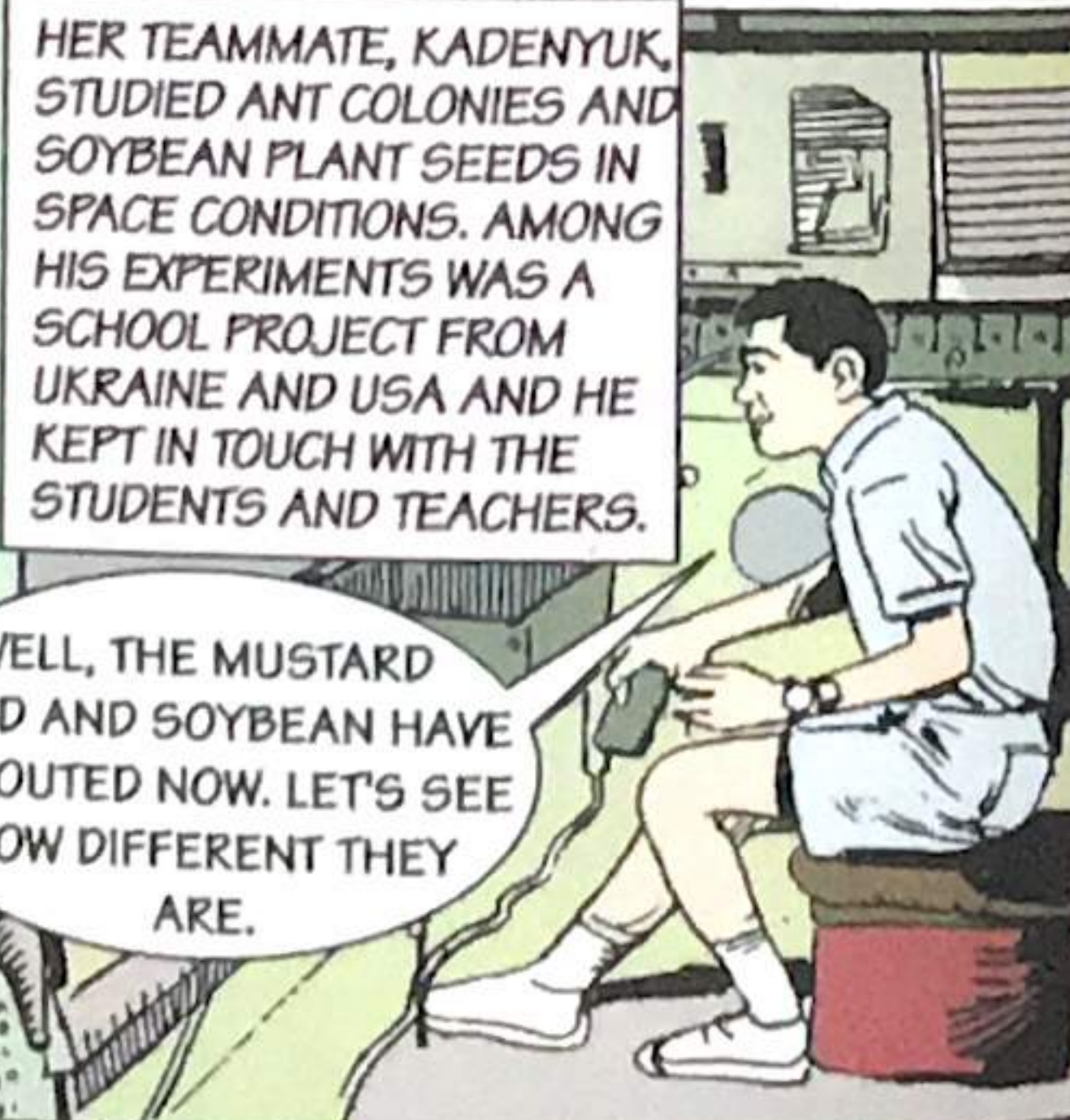


AS THE MISSION SPECIALIST, KALPANA HAD TO DO MANY EXPERIMENTS FOR TESTING METALS SILICON CHIPS IN ZERO GRAVITY.

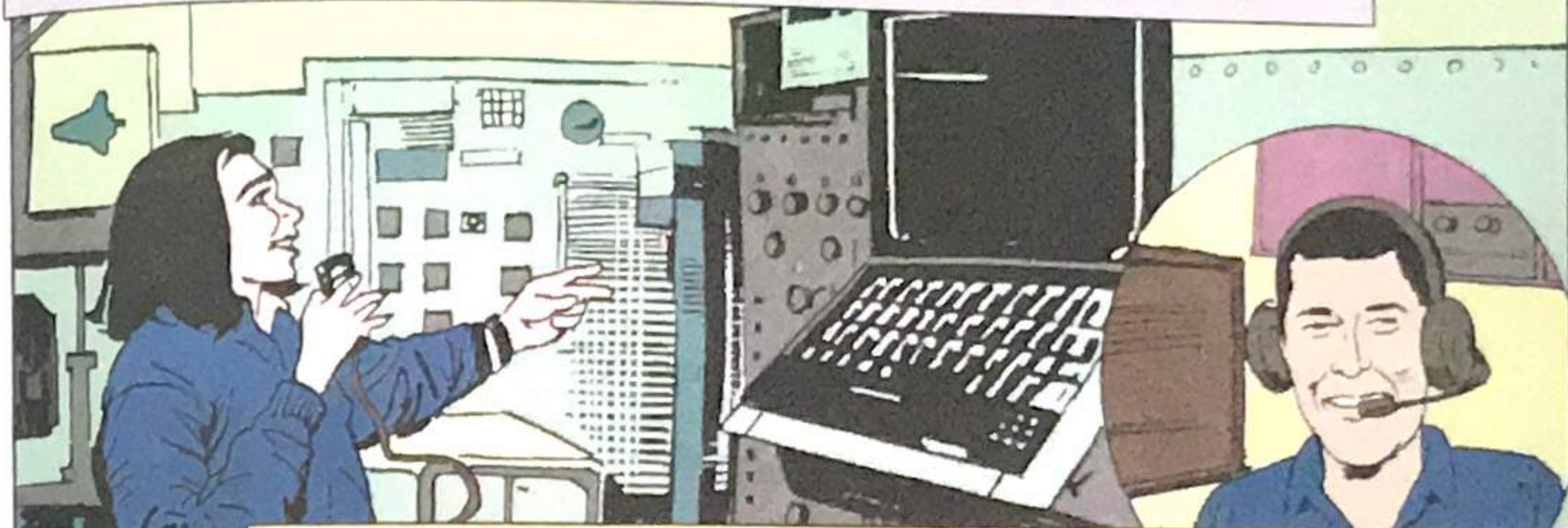


HER TEAMMATE, KADENYUK, STUDIED ANT COLONIES AND SOYBEAN PLANT SEEDS IN SPACE CONDITIONS. AMONG HIS EXPERIMENTS WAS A SCHOOL PROJECT FROM UKRAINE AND USA AND HE KEPT IN TOUCH WITH THE STUDENTS AND TEACHERS.

WELL, THE MUSTARD SEED AND SOYBEAN HAVE SPROUTED NOW. LET'S SEE HOW DIFFERENT THEY ARE.



AMONG KALPANA'S DUTIES WAS THE OPERATION OF A 16-METRE LONG ROBOTIC ARM TO PICK UP THE SATELLITE SPARTAN FROM ITS HOLD IN THE BAY AND RELEASE IT INTO SPACE.



AT THE APPOINTED TIME, KALPANA USED THE ROBOTIC ARM TO RELEASE THE SATELLITE. IT SLIPPED AND SPUN AROUND SO THAT IT COULD NOT BE REORIENTED FOR A STUDY OF THE SUN. UNDER THE GUIDANCE OF THE CAPTAIN AND MISSION CONTROL, THEY TRIED AGAIN.

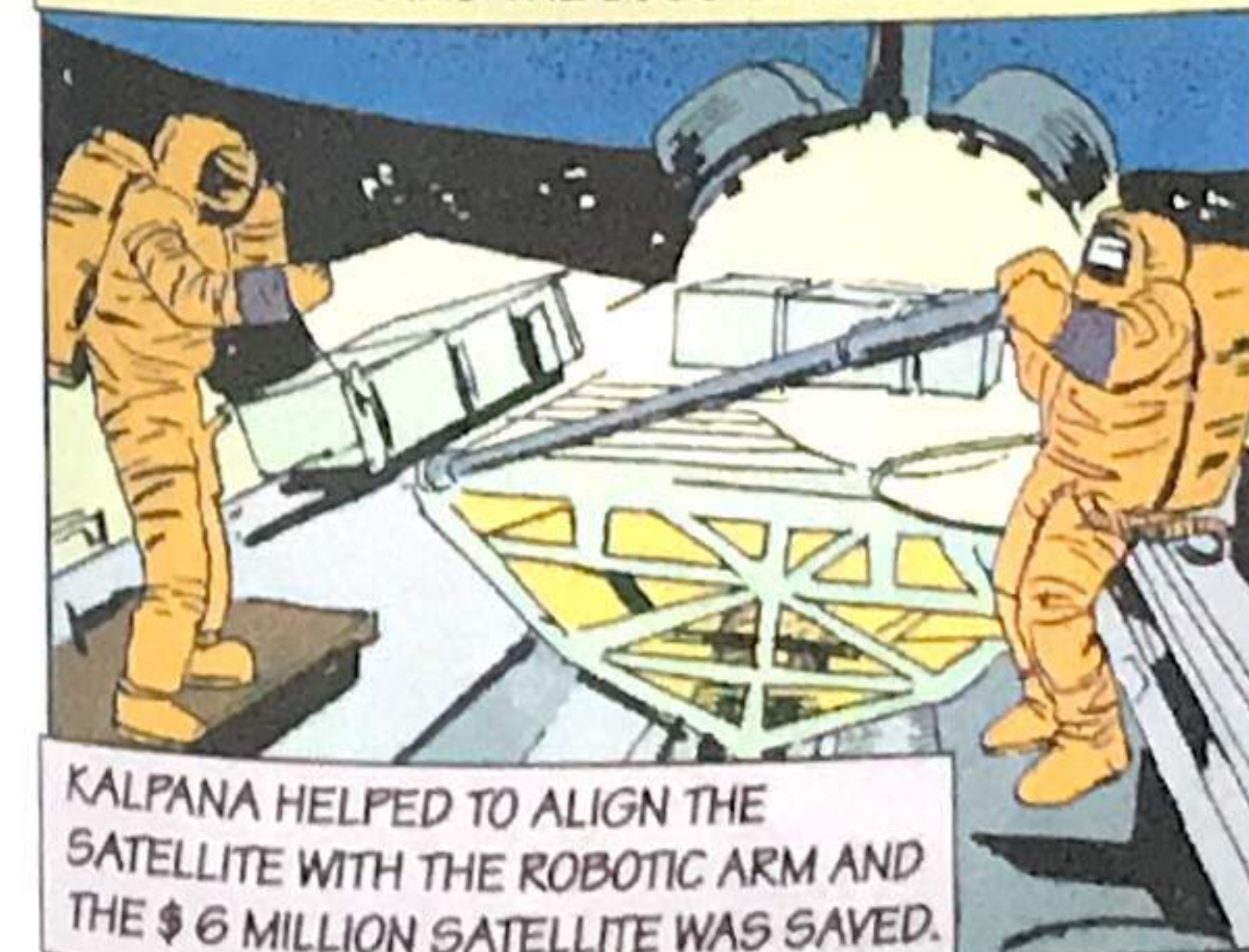
LATER, KALPANA TRIED TO RECAPTURE THE SATELLITE USING THE ROBOTIC ARM.



MISSION CONTROL FROM EARTH THEN THOUGHT OF ANOTHER PLAN.



THE TWO SPACE WALKERS WERE TRAINED FOR THE TASK OF GRABBING THE 3000-LB SATELLITE.



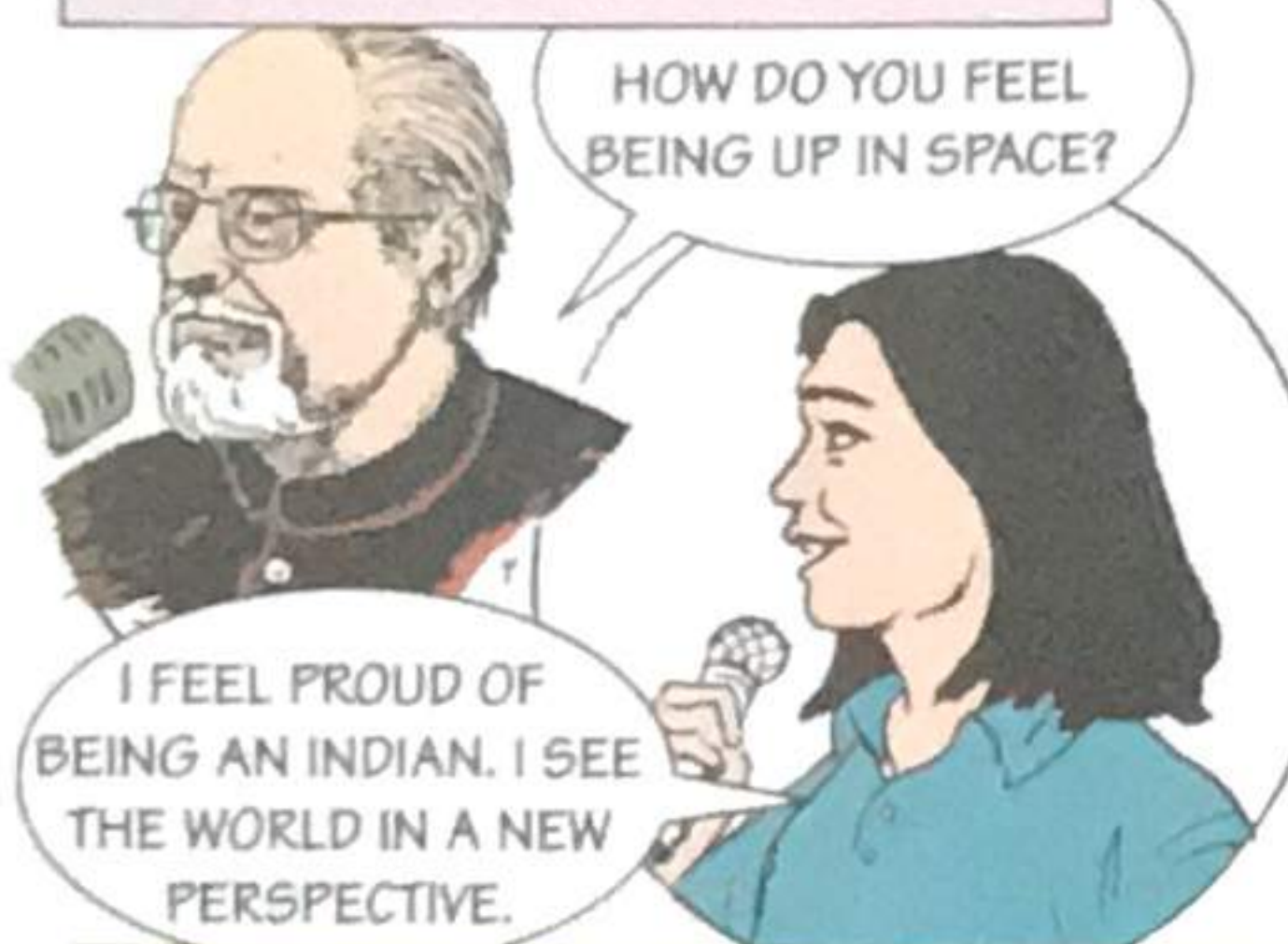
KALPANA HELPED TO ALIGN THE SATELLITE WITH THE ROBOTIC ARM AND THE \$6 MILLION SATELLITE WAS SAVED.

MOST OF THE EXPERIMENTS ABOARD THE STS-87 WERE SUCCESSFUL.



TODAY IS THANKSGIVING DAY. WE HAVE THE TRADITIONAL MEAL OF TURKEY AND PUMPKIN PIE.

KALPANA ALSO SPOKE TO THE PRIME MINISTER OF INDIA, MR I. K. GUJRAL.



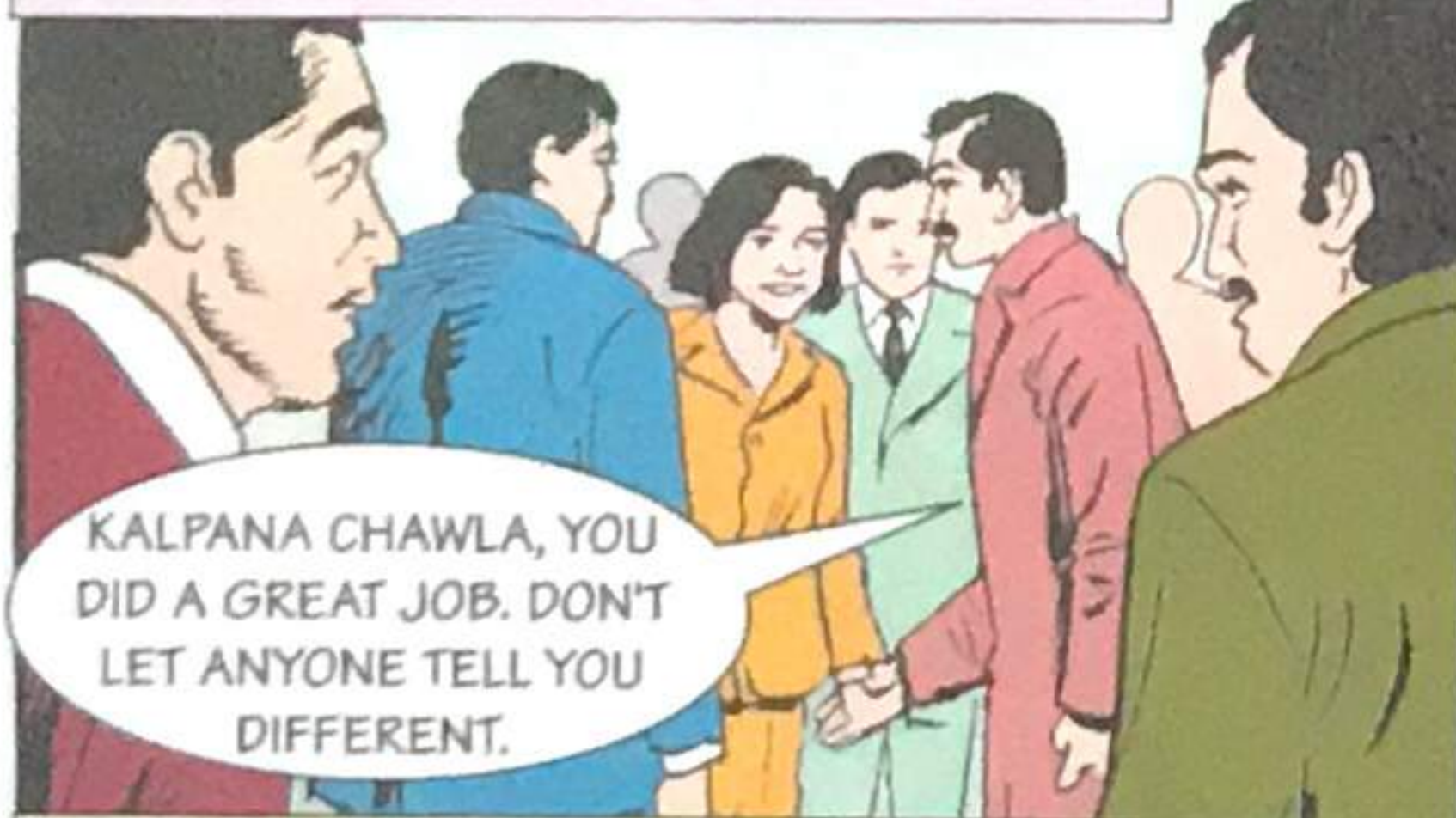
THEY LOGGED 6.5 MILLION MILES IN 252 ORBITS AROUND THE EARTH IN 376 HOURS AND 34 MINUTES.

ON DECEMBER 5, 1997, THE SHUTTLE RETURNED TO EARTH AND FLOATED DOWN ON THE RUNWAY OF THE KENNEDY SPACE CENTER.



A PROUD FAMILY AND AN ENTIRE NATION CELEBRATED THE SUCCESSFUL FLIGHT OF THE FIRST INDIAN WOMAN IN SPACE.

ON LANDING, SOME OF THE SENIOR OFFICIALS OF NASA SHOOK KALPANA'S HAND WARMLY.

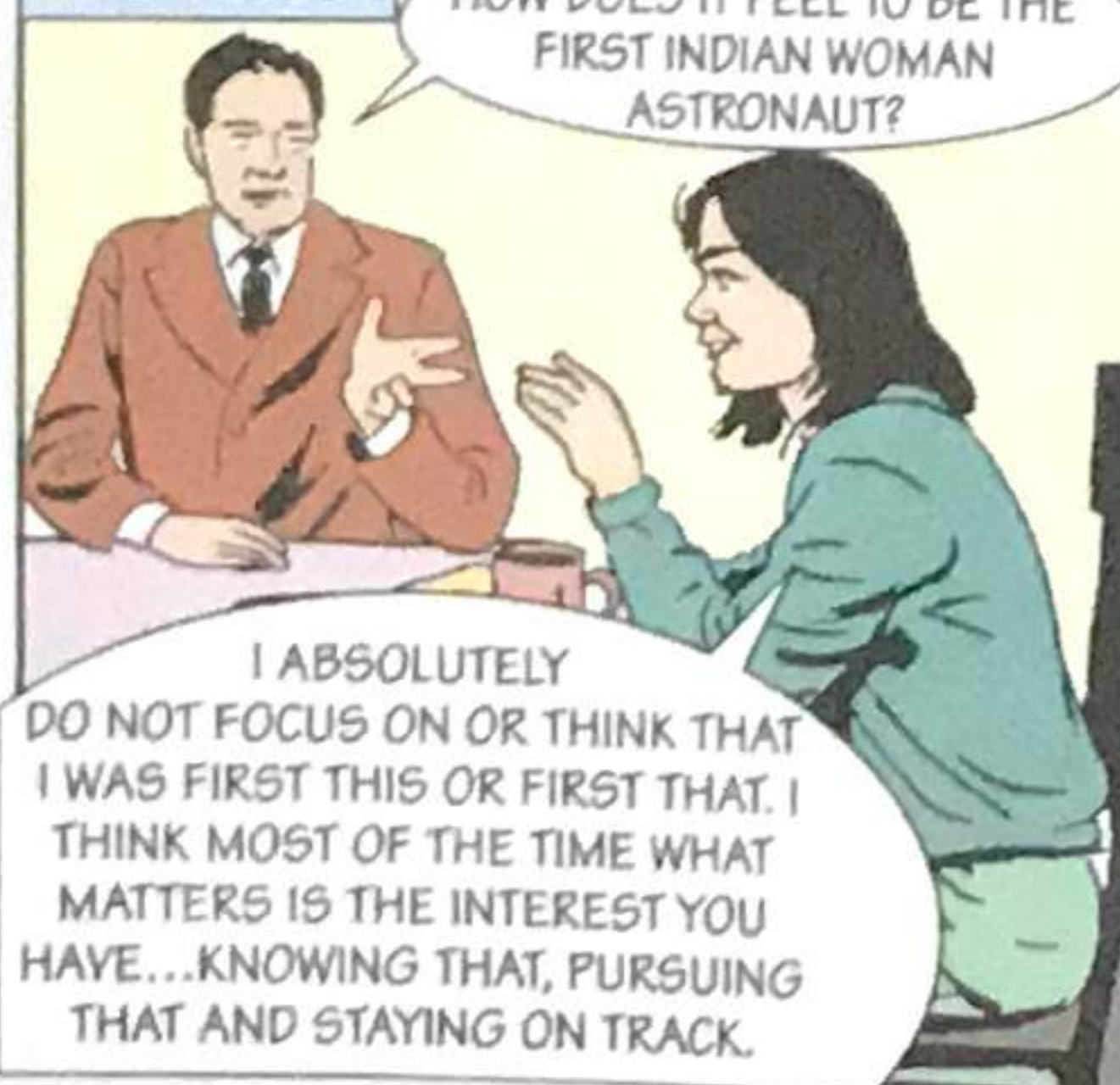


INVESTIGATION PROVED THAT THE ROBOTIC ARM MALFUNCTIONED BECAUSE OF AN INHERENT ERROR IN ITS MECHANISM, AND IN NO WAY WAS IT KALPANA CHAWLA'S FAULT.

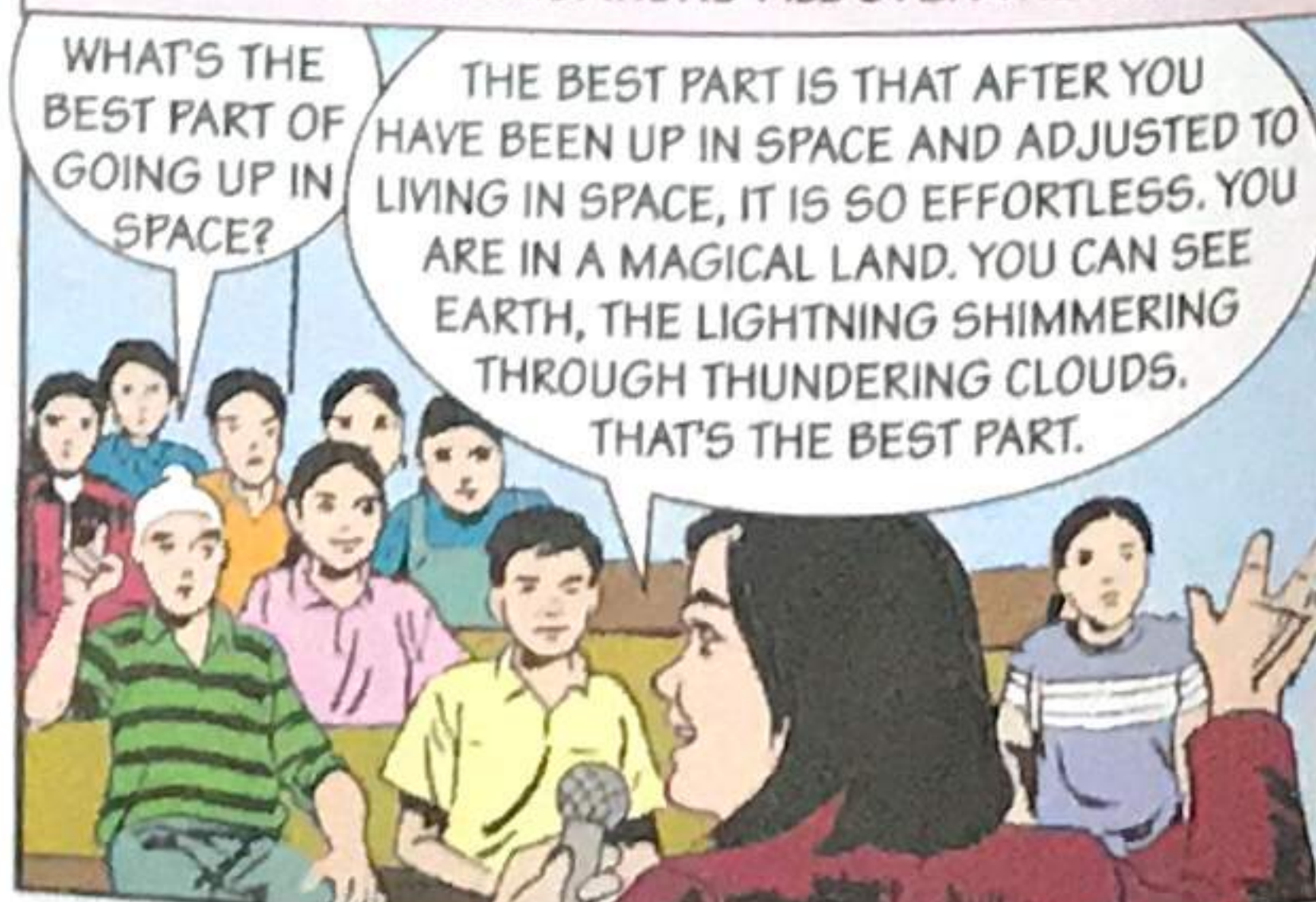
RECALLING HER FIRST FLIGHT IN SPACE KALPANA WAS FILLED WITH AWE AND WONDER.



IN SPITE OF HER ACHIEVEMENTS, KALPANA WAS MODEST.



AFTER LANDING BACK ON EARTH, THERE WAS A LOT OF WORK TO DO. FOR ABOUT TWO MONTHS, THE CREW TRAVELLED AND SHARED THEIR EXPERIENCES WITH SCHOOLS AND ORGANISATIONS ALL OVER THE WORLD.



AND THE WORST?

ON THE FIRST DAY, YOU DON'T FEEL SO GOOD. THEN YOUR BODY GETS ADJUSTED. COMING BACK TO EARTH IS ALSO HARD, AS IF YOU HAVE BEEN IN A DIFFERENT DIMENSION AND HAVE TO COME AWAY FROM IT. SOMETHING ELSE THAT IS NOT MUCH FUN IS GETTING USED TO THE TOILET FACILITY IN SPACE.

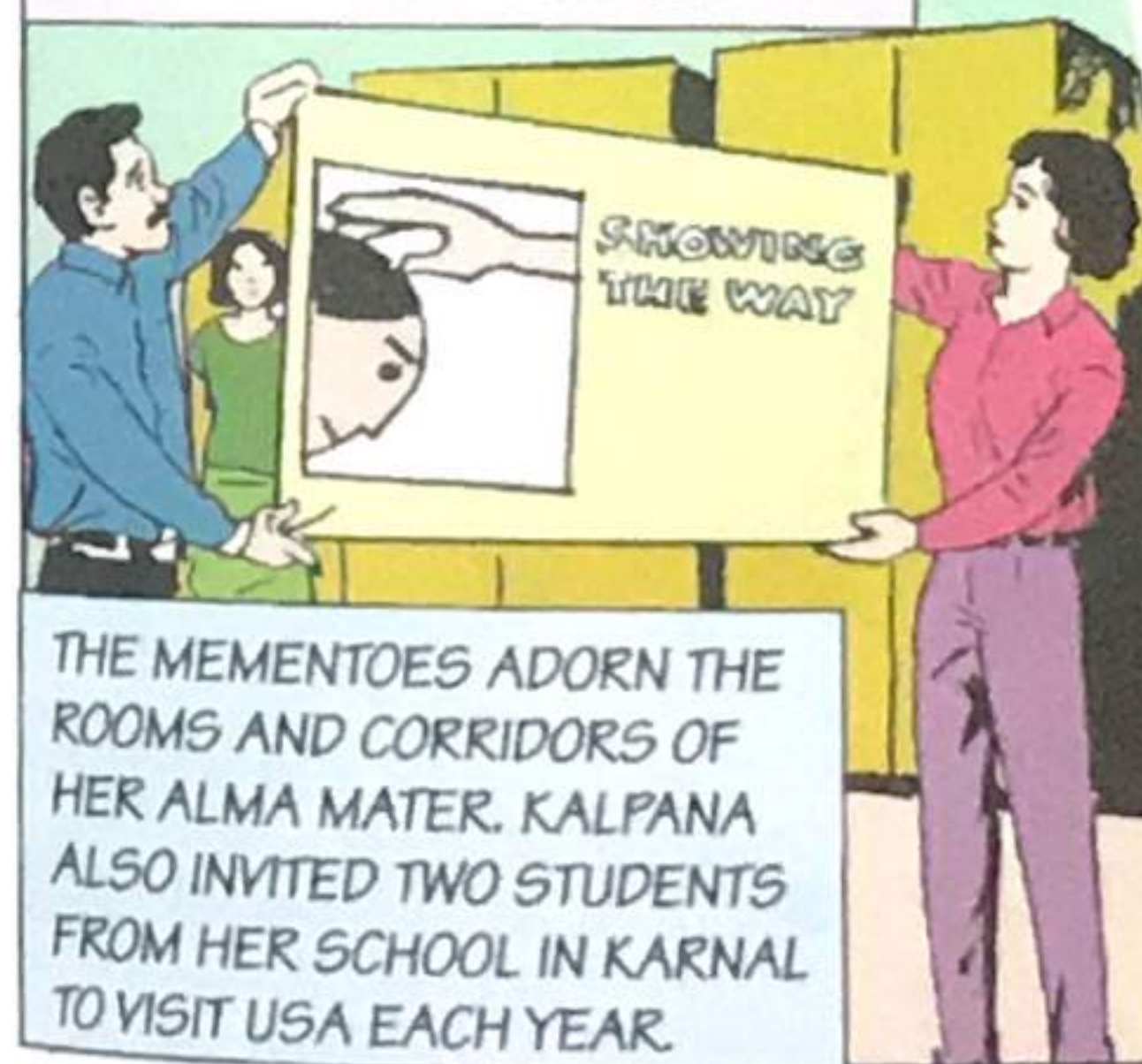


HOW DOES IT FEEL TO BE WEIGHTLESS?

THE CLOSEST THING TO IT ON EARTH IS DIVING. WHERE YOU FEEL YOU ARE BUOYED BY WATER. BUT IN SPACE WEIGHTLESSNESS IS COMPLETELY EFFORTLESS AND JUST A GENTLE PUSH IS ALL YOU NEED TO MOVE. EVEN WITH A BIG TOE TUCKED UNDER A STRAP, YOU CAN STAY IN ONE POSITION AND WORK.



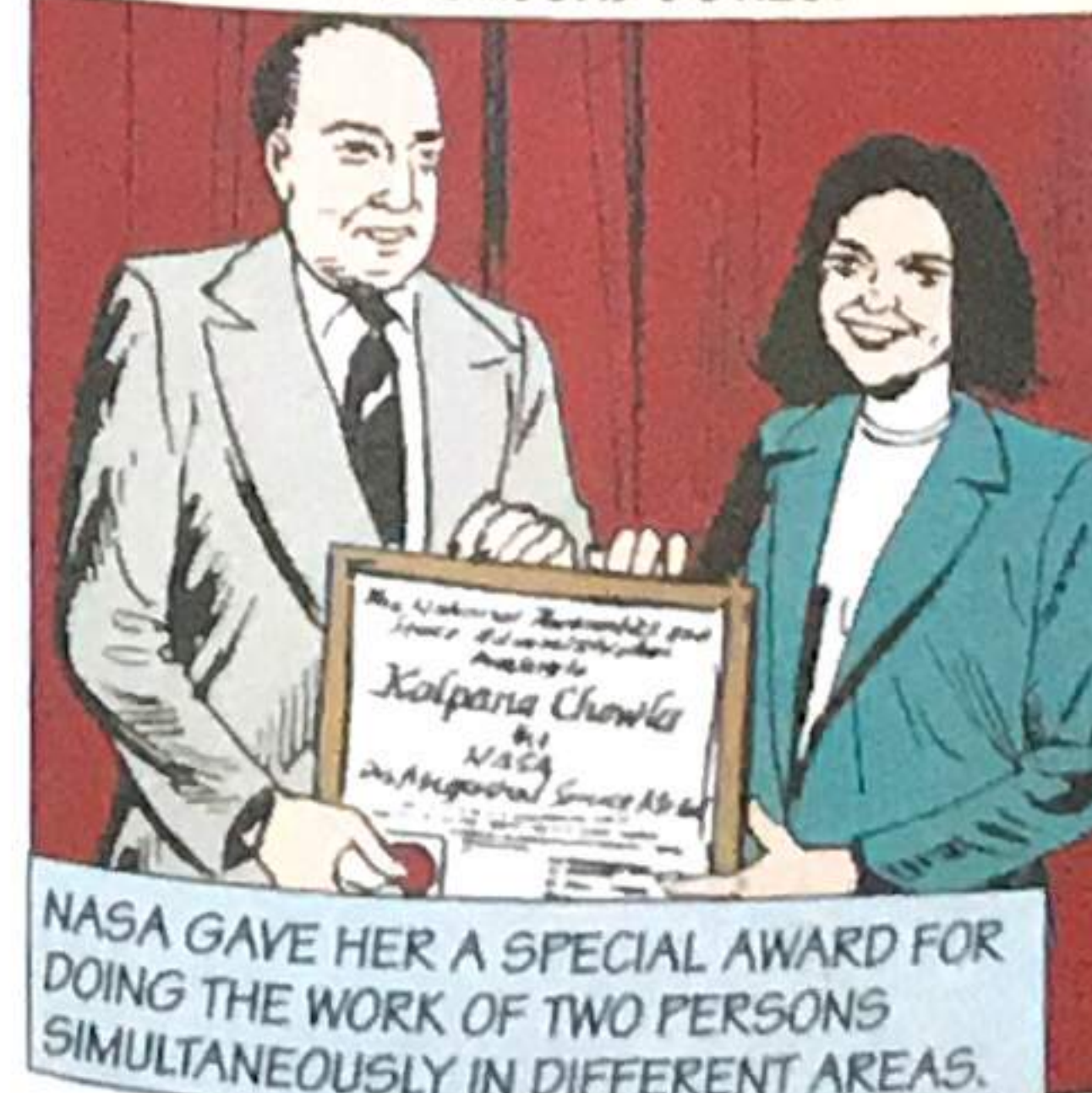
KALPANA SENT MANY BADGES, MEMENTOES AND MESSAGES TO HER SCHOOL AND COLLEGE.



THIS WAS FOR A NASA SPONSORED SPACE EXPERIMENT PROGRAM CONDUCTED BY THE INTERNATIONAL SPACE SCHOOL FOUNDATION EACH SUMMER.



AFTER HER FIRST FLIGHT IN SPACE, KALPANA WAS ASSIGNED GROUND DUTIES.



IT IS NOT USUAL FOR ASTRONAUTS TO GET ANOTHER CHANCE OF GOING INTO SPACE. SO KALPANA WAS SURPRISED WHEN SHE GOT A PHONE CALL FROM MISSION IN-CHARGE.



KALPANA WAS A POPULAR TEAMMATE EVEN IN THE GROUND OFFICE.



FOR THE SECOND FLIGHT, KALPANA WAS SELECTED AS FLIGHT ENGINEER AND MISSION SPECIALIST FOR THE STS-107.



KALPANA HAD SELECTED HER FAVOURITE MUSIC FOR THE FLIGHT.



HER COMPANIONS ON THE SECOND FLIGHT WERE COMMANDER RICK HUSBAND, PILOT WILLIAM MCCOOL, MISSION SPECIALISTS LAUREL CLARK AND DAVID BROWN, PAYLOAD COMMANDER MICHAEL ANDERSON AND PAYLOAD SPECIALIST IAN RAMON.



IT WAS THE 28TH TRIP INTO SPACE OF THE SPACE SHUTTLE COLUMBIA. THE CREW OF STS-107 WAS A WELL-KNIT, CARING BUNCH WITH A GREAT SENSE OF HUMOUR.



THE ASTRONAUTS HAD TO COMPLETE EIGHTY EXPERIMENTS ON BOARD, RANGING FROM GENE TRANSFER IN SEEDS TO STUDYING THE DUST IN THE EARTH'S OZONE LAYER. WITH THE TEAM TAKING TURNS, WORK WENT ON ROUND THE CLOCK.



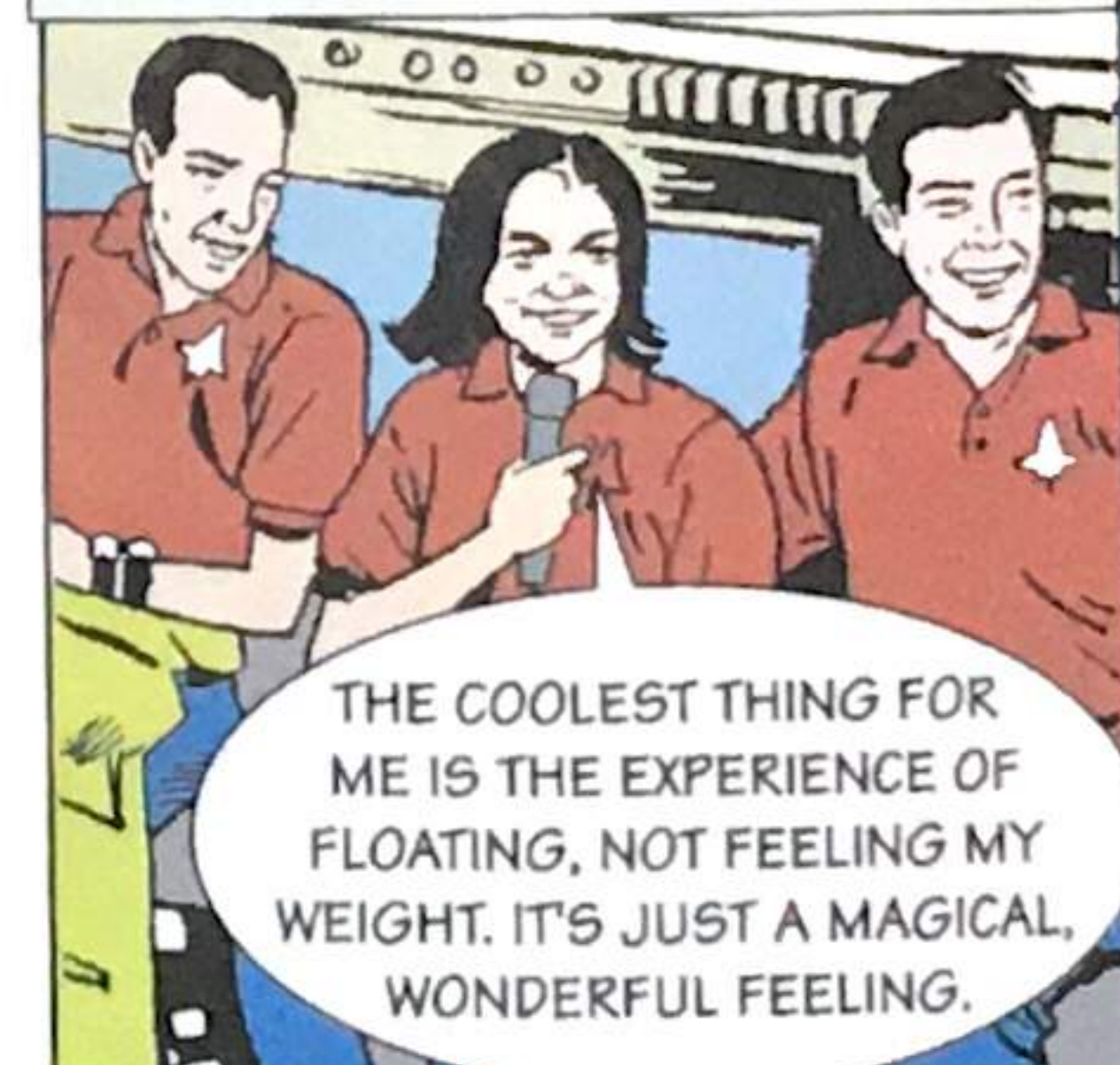
KALPANA'S WAS A BUSY SCHEDULE, SINCE HER DUTIES INCLUDED CHECKING ALL METRES AND DISPLAYS ON BOARD AND MAKING SURE THAT ALL SYSTEMS WORKED.



YET AMIDST ALL THE PRESSURE AND WORK, KALPANA MAINTAINED HER SCHOOLGIRL SENSE OF FUN.



EVERYTHING WAS WORKING PERFECTLY, AND ON JANUARY 29, 2003, KALPANA SAID FROM SPACE:



COLUMBIA SPENT 15 DAYS, 22 HOURS AND 20 MINUTES IN ORBIT. ON FEBRUARY 1, 2003, THE STS-107 WAS SCHEDULED TO RE-ENTER EARTH'S ATMOSPHERE.



IN HER SCHOOL AND COLLEGE, THERE WERE PLANS TO CELEBRATE HER RETURN. THE ENTIRE WORLD AWAITED THE RETURN OF THE SEVEN ASTRONAUTS.



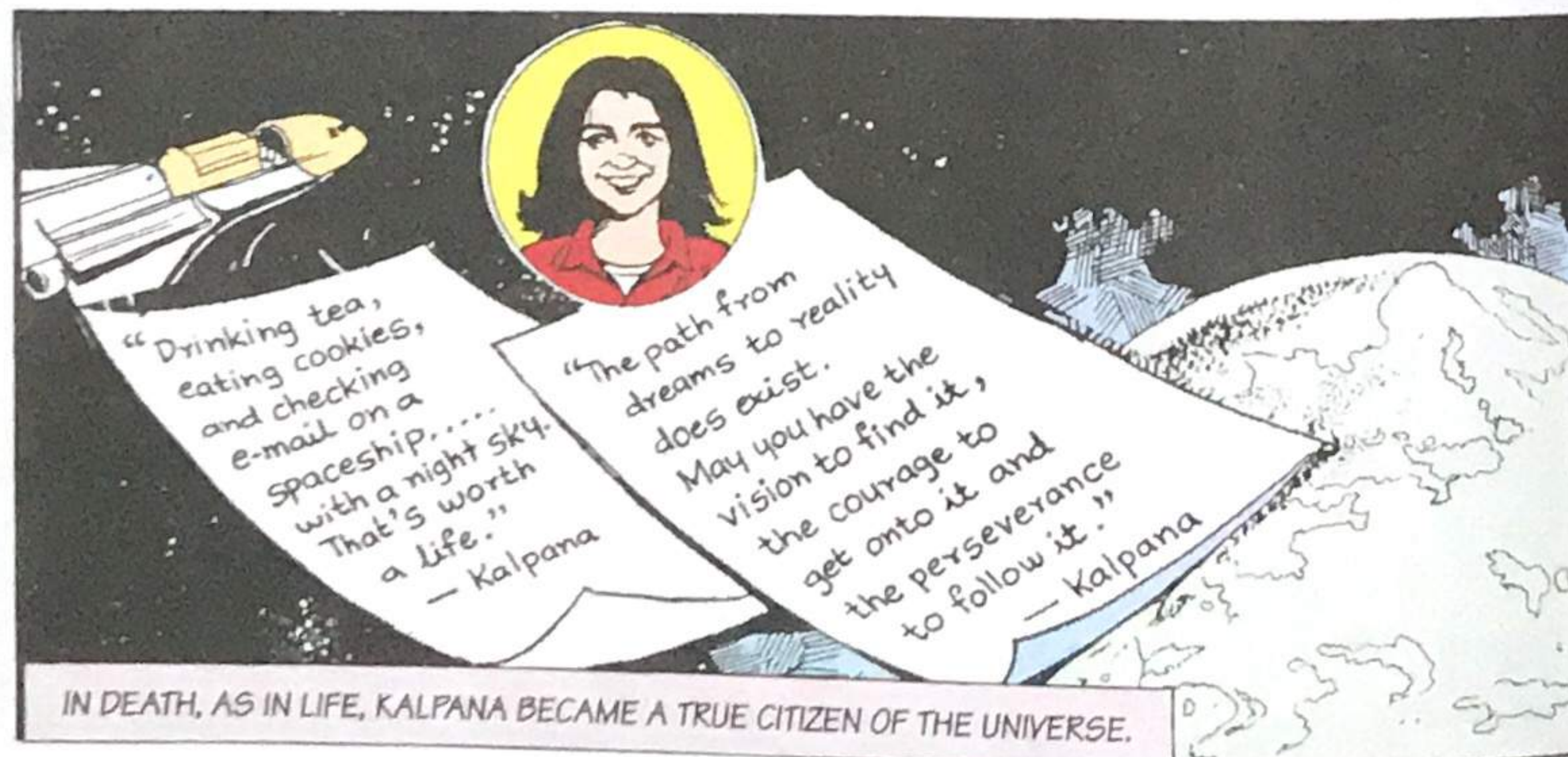
BUT A FEW MINUTES BEFORE LANDING TIME, THE SPACECRAFT BURST INTO FLAMES.



DURING THE LAUNCH ON JANUARY 16, 2003, SOME MATERIAL HAD FALLEN ON THE TILE-COVERED WING OF THE SHUTTLE AND CAUSED A CRACK. AT THAT TIME IT WAS NOT FELT TO BE IMPORTANT.



HOWEVER, AFTER 15 DAYS IN SPACE, ON FEBRUARY 1, A MERE 16 MINUTES BEFORE LANDING TIME, THE CRACK CAUSED A FATAL ACCIDENT. THE SPACECRAFT BROKE APART OVER THE STATE OF TEXAS AND THE SEVEN ASTRONAUTS ABOARD MET A TRAGIC END.



IN DEATH, AS IN LIFE, KALPANA BECAME A TRUE CITIZEN OF THE UNIVERSE.

WHICH OF THE ACKs HAVE YOU STILL NOT READ?

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Ghatotkacha
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Krishna And Narakasura
Krishna And Rukmini
Krishna And Shishupala
Krishna And The False
Vaasudeva
Kubera
Kumbhakarna
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Nahusha
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The Deadly Feast
The Dwarf
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Kesari The Flying Thief
King Kusha
Manduka

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The Elephant
The Brahmin And
The Goat
The Dullard
The Greedy Mother-in-law
The Jackal And
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